MARCH/APRIL 2014

$5.00

POWERLINE

EGSA

The Voice of the On-Site Power Generating Industry

Tracking Valuable EGSA Member Contributions

Our Members... Not Just Cogs in the Wheel

Plus:

Do DC Generators Offer Fuel Economy Advantages Over AC Generators? Answers for the Telecom Industry

Best Practices In Electric Power System Testing For Improved Availability

Battery Selection is Key to Avoiding Dangerous Consequences at Utility Substation

Collicutt Energy Services Member Profile

ELECTRICAL GENERATING SYSTEMS ASSOCIATION
1650 South Dixie Highway, Suite 400
Boca Raton FL 33432

PRSRT STANDARD
U.S. POSTAGE
PAID
FORT LAUDERDALE, FL
PERMIT #1956

THE ENERCON CAPABILITY

INTERNATIONAL AIRPORT

STANDBY POWER & PARALLELING WITH UTILITY

ENGINES: Four engines rated at 2,000 kW / 2,500 kVA • Diesel fueled, skid base, double walled 1,000 gallon tank

GENERATORS: 3 phase, 60 Hz • 13.8 kV, 104.6 amps • Total capacity = 8 MW/10MVA, 418.4 amps

CONTROLS & SWITCHGEAR: Enercon Evolution Control System with touch screen controls

MIDWESTERN UNIVERSITY

STANDBY EMERGENCY POWER

ENGINES: Four 2,250 kW engines • Diesel Fuel • Horizontal Radiator

GENERATORS: 9 MW total power • 12,470 volts

CONTROLS & SWITCHGEAR: Touch screen controls • NEMA 1 automatic paralleling medium voltage switchgear • 3 phase, 3 wire 1,200 amp main bus • SCADA monitoring system

CONTROL SYSTEMS & SWITCHGEAR

Custom engineered to meet the customers every requirement, these projects are typical of Enercon's global presence and worldwide leadership in the design and manufacturing of engine generator set packages and enclosures for customer provided engines.

We work closely with our customers throughout the design/build phase and beyond. One hundred percent of all control systems and switchgear are tested in our factory test center prior to shipment, and we back our products after the sale with responsive 24/7 world-wide service support.

ENERCON
ENGINEERING, INC.®

CUSTOM SWITCHGEAR • CONTROL SYSTEMS • PACKAGING • POWER MODULES • ENCLOSURES • COGENERATION

1.800.218.8831 • WWW.ENERCON-ENG.COM

CONTENTS

Volume 49, No. 2 • March/April 2014

Columns

From the Top 7
Raymond G. Russell Education Grant

Education 8
A Whirlwind of Activity for Q1, EGSA Education Programs Are on the Move!

Codes & Standards 10

Features

Do DC Generators Offer Fuel Economy Advantages Over AC Generators? Answers for the Telecom Industry 13

Best Practices In Electric Power System Testing For Improved Availability 18

Tracking Valuable EGSA Member Contributions 20
Our Members... Not Just Cogs in the Wheel

Battery Selection is Key to Avoiding Dangerous Consequences at Utility Substation 23

Collicutt Energy Services Member Profile 29
Another in our series of EGSA Member company profiles.

Departments

Events Calendar 5
Association and Industry events.

Index of Advertisers 6
Who's Who in this issue of *Powerline*.

Association News 27
Updates from EGSA.

EGSA Membership Application 31
It pays to be a Member of EGSA. Join now!

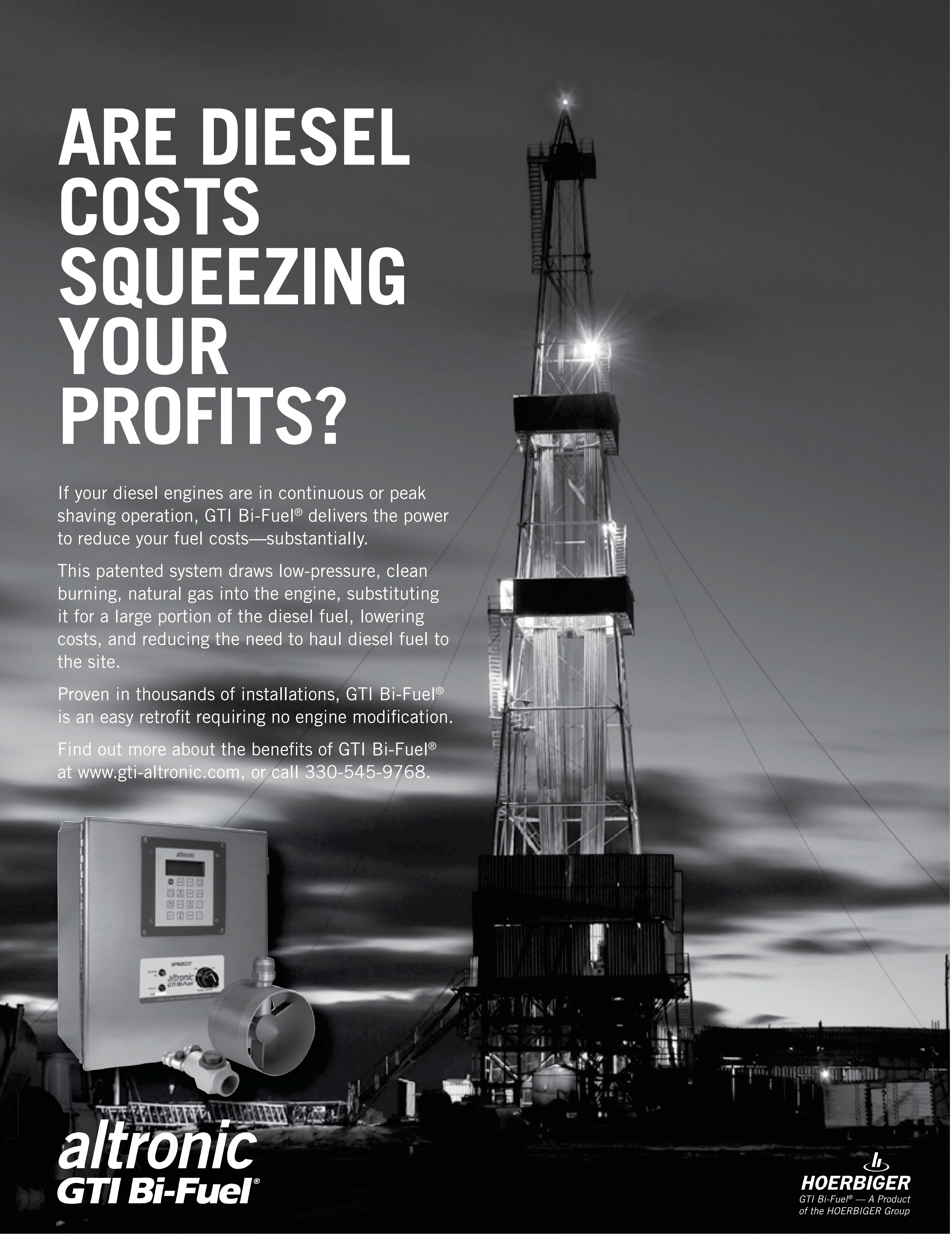
EGSA New Members 33
Who has joined EGSA in the past few months?

Job Bank 35
Looking for a new job?

Industry News. 37
The latest reports.

POWERLINE
EGSA
Tracking Valuable EGSA Member Contributions
Our Members... Not Just Cogs in the Wheel

*On the Cover:
Tracking Valuable EGSA
Member Contributions; Page 20*



ARE DIESEL COSTS SQUEEZING YOUR PROFITS?

If your diesel engines are in continuous or peak shaving operation, GTI Bi-Fuel® delivers the power to reduce your fuel costs—substantially.

This patented system draws low-pressure, clean burning, natural gas into the engine, substituting it for a large portion of the diesel fuel, lowering costs, and reducing the need to haul diesel fuel to the site.

Proven in thousands of installations, GTI Bi-Fuel® is an easy retrofit requiring no engine modification.

Find out more about the benefits of GTI Bi-Fuel® at www.gti-altronic.com, or call 330-545-9768.

altronic
GTI Bi-Fuel®

HOERBIGER
GTI Bi-Fuel® — A Product of the HOERBIGER Group

EVENTS CALENDAR

Industry Trade Shows

POWER-GEN International 2014

December 9-11, 2014; Orlando, FL

The world's largest show for power generation, featuring the EGSA On-Site Power Pavilion. For exhibit information, contact EGSA at (561) 750-5575, ext 205 or e-mail Jalane Kellough at *J.Kellough@EGSA.org.*

Conferences & Conventions

NFMT Conference & Expo 2015

March 10-12, 2015; Baltimore, MD

The country's #1 conference and exposition for non-residential building owners; facility managers; maintenance engineers; directors of sustainability; planning; operations and management. EGSA has partnered with NFMT for the third year in a row with the Power Source Pavilion. The Power Source Pavilion and educational sessions will provide facility professionals with exclusive access to on-site power solutions. For exhibit information, contact EGSA at (561) 750-5575, ext 203 or e-mail Kim Giles at *K.Giles@EGSA.org.*

EGSA 2014 Fall Technical & Marketing Conference

September 14-16, 2014; San Diego (Mission Bay), CA

The Fall Technical and Marketing Conference is held during September and is designed to focus on technical and marketing issues. Registration information will be available online at *www.EGSA.org* or call (561) 750-5575.

EGSA 2014 George Rowley School of On-Site Power Generation

The most complete overview of an On-Site Power Generation System available. Gain valuable Continuing Education Units (CEUs) by applying today! For information, visit *www.EGSA.org* or call (561) 750-5575.

Basic Schools

~~Scottsdale, AZ~~	~~February 25-27~~
Charlotte, NC	June 3-5
Minneapolis, MN	August 12-14
Orlando, FL	December 9-11*

*To be held concurrently with POWER-GEN International 2014

Advanced Schools

San Antonio, TX	April 28-May 1
San Diego-Vista/Carlsbad, CA	July 14-17
Rosemont (Chicago), IL	October 20-23

We keep you in control

When it comes to power generation and industrial engine control ComAp is the recognized name for:

- Advanced controller technology that makes the complex simple
- Outstanding quality and reliability
- Innovation and flexibility
- Exceptional value
- Worldwide availability through our distribution network

ComAp

THERE'S A COMAP SOLUTION FOR EVERY APPLICATION

Visit the ComAp website:
www.comap.cz

ADVERTISERS INDEX

Altronic, LLC (GTI Bi-Fuel)	4
Anna, Inc.	36
ASCO	40
Chillicothe Metal Company	19
ComAp, LLC	5
Diesel Gas & Turbine Publications	34
EGSA George Rowley School of On-Site Power Generation	33
Enercon Engineering, Inc.	2
Flight Systems	14
Generator Solutions, Inc.	28
Hennig Enclosure Systems	26
Hilliard Corp.	28
International Supply Co.	38
Loadbanks Direct, LLC	14
MIRATECH	17
Phoenix Products	25
Power & Compression Sales, Inc.	39
Pritchard Brown	17
Russelectric, Inc.	11
Showmen Supplies Inc.	17
Transtar	26
United Alloy, Inc.	9
Universal AET	12
VDO	36

Disclaimer

Powerline Magazine is wholly owned and operated by the Electrical Generating Systems Association (EGSA) and includes advertising, press releases, editorials, and other materials and information submitted by third parties and gathered by EGSA, its publisher, and its agents and from contributors. This information is passed along by EGSA for the interest of its members only. With regard to products, services and information mentioned, advertised, or printed, EGSA, its publisher, and its agents, do not investigate the merit, accuracy or value of the material or information, and make no representations, warranties or endorsements of any kind, and hereby disclaim any responsibility to parties using such products, services or information. Readers' activities are at their own risk.

With regard to editorials, letters to the editor, columns and any other opinions expressed herein, EGSA, its publisher and its agents, do not ratify, adopt, endorse or verify such opinions, and hereby state that any opinions, express or implied, are solely those of the speaker. No information is to be regarded as legal advice and reliance thereon and accuracy of statements is hereby disclaimed.

With regard to information contained herein generally, EGSA, its publisher and its agents, do not guarantee, represent or verify the accuracy of any information. EGSA, its publisher and its agents, endeavor to provide accurate information, but cannot guarantee the accuracy and hereby disclaim liability for any reliance on the information contained herein.

EGSA, its publisher and its agents, make no representations, warranties or endorsements of any kind of the information, opinions, and advertisements contained herein, do not assert the accuracy of any statements and all reliance thereon is hereby disclaimed.

2014 EGSA Officers

President
Vaughn Beasley, Ring Power Corporation
vaughn.beasley@ringpower.com

President-Elect
Ed Murphy, Power Search, Inc.
ed@powersearchinc.com

Vice President
Bob Hafich, Emergency Systems Service Company
bobh@emergencysystems-inc.com

Secretary-Treasurer
Charlie Habic, Gillette Generators Inc.
crhabic@gillettegenerators.com

Immediate Past President
Debra Laurents, Cummins Power Generation
debra.m.laurents@cummins.com

2014 EGSA DIRECTORS

Katie Evans, Diesel & Gas Turbine Publications, Inc.
Steve Evans, ASCO Power Technologies
Bill Kaewert, SENS (Stored Energy Systems LLC)
Todd Lathrop, Eaton Corporation
Rick Morrison, Nixon Power Services Company
Dennis Pearson, Woodward
Walter Petty, Atlantic Power Solutions, Inc.
Lanny Slater, GFS Corporation
Kyle Tingle, John Deere Power Systems

EGSA STAFF

Jalane Kellough, Executive Director
Annie Burford, Manager of Conventions & Meetings
Liz Bustamante, Manager of Membership & Technology
Peter A. Catalfu, Manager of Communications
Herb Daugherty, Manager of the Rowley School
Kim Giles, Marketing Manager
Michael Pope, Director of Education
Debby Amaral-Robinson, Accounting Manager
Herbert V. Whittall, Technical Advisor
Kelly Wilson, Office Manager

SERVICE INFORMATION

For Subscriber orders, change of address, reprints,
and back issues (when available), contact:
Editor, *Powerline* magazine
1650 S. Dixie Hwy, Suite 400 • Boca Raton, FL 33432
561/750-5575 • Fax 561/395-8557
e-mail@egsa.org • *www.EGSA.org*

Powerline is published six times per year on a bi-monthly basis. Articles and information submitted for publication should be forwarded to the attention of the Editor at the address above 30 days prior to publication. Technical articles and articles of general interest to the electrical generation industry are actively sought and encouraged. *Powerline* reserves the right to limit information appearing in its pages to that which, in its sole discretion, will reflect positively on EGSA and the industry which it serves.

Throughout every issue of *Powerline*, trademark names are used. Rather than place a trademark symbol at every single such occurrence, we aver here that we are using the names in an editorial fashion only. EGSA has no intention of infringing on these trademarks.

Electrical Generating Systems Association
1650 S. Dixie Hwy, Suite 400 • Boca Raton, FL 33432
561/750-5575 • Fax 561/395-8557
e-mail@egsa.org • *www.EGSA.org*

Raymond G. Russell Education Grant

Vaughn Beasley
2014 EGSA President
Vaughn.Beasley
@RingPower.com

On behalf of the EGSA Board of Directors and EGSA member firm, Russelectric, it gives me great pride to announce a groundbreaking education grant in support of our nation's armed services veterans. This exciting education program is being developed in conjunction with the EGSA Rowley Schools and the Government Relations & Education Committees.

The EGSA Raymond G. Russell Education Grant is an annual grant of $10,000 per year, commencing this year, in 2014. The Grant will be awarded to 4 individuals up to $2500.00 each and these monies will be used to cover the tuition and travel costs for four United States Armed Services Veterans to attend a Rowley School.

Your EGSA Board of Directors approved a motion in November to up the ante, adding a contribution of $5000.00 annually from EGSA. This should allow for 2 additional grants, totaling a minimum of 6 grants annually, under the education grant's terms.

EGSA will also waive the membership fee for each of the grant recipients, treating the memberships as if they are student members. Special thanks, in advance, go also to our Membership Committee for their work on defining a specific military category if need be; Greg Linton (your EGSA 2009 Past President) is leading this effort on behalf of the Committee. "This Grant comes at a wonderful time in our EGSA history. To be able to assist veterans as they return from service, offer education in our industry and the opportunity to become engaged with our organization is a "win-win" on so many levels!" reports Linton.

The application requirements have been determined and are listed in the sidebar of this article. The administration of the grant will be handled by EGSA Staff, similarly to the David I. Coren Scholarship Program. The selection process for each grant will be overseen by a sub-committee to the Government Relations Committee.

If you have an interest in playing an active role on this sub-committee and would like to have a voice in the process, we would welcome your inquiry.

Application Requirements for the Raymond G. Russell Education Grant:

Base requirements:

- Honorable Discharge from one of 5 United States Armed Services (Army, Air Force, Marines, Navy, or Coast Guard) or Active Reservist or National Guard.
- Must have previous Electric Power Generation experience.

Submittal documents will include the following additional criteria for review and award:

- Complete the EGSA Raymond G. Russell Education Grant application form;
- Provide a cover letter and current resume;
- Submit a minimum of 2 letters of recommendation;
- Submit a copy of DD214 to validate discharge status and service specialty

The review of the applications and subsequent materials will be reviewed initially by the Government Relations Sub-Committee. Upon recommendations, 2 members of the Government Relations Committee, along with George Whittaker of Russelectric, will the review the selected recipients' materials, with final approval by the EGSA Board.

This annual grant is designed to provide worthy individuals with a full ride on all costs associated with the Rowley School. Travel expenses that meet our travel policy limits are also included. It is open to all veterans who meet the established criteria with the goal of providing additional education and improvements to their skill set and to assist in their career development in On-Site Power. We hope you will join us in thanking Russelectric, for this wonderful contribution. ■

Michael Pope
EGSA Director
of Education
m.pope@EGSA.org

A Whirlwind of Activity for Q1, EGSA Education Programs Are on the Move!

Just like the famous scene from Godfather III where Michael Corleone says to Mary, "Just when I thought I was out, they pull me back in," I did not expect to see my name heading this part of Powerline Magazine! Having spent all of my career in the power generation industry and with all of my 4 employers during the past 50 years (good grief!) having been EGSA members, I am really excited to be able to continue working in this industry, on a subject that I truly enjoy and believe to be worthwhile – Education.

Since attending an On-Site Power Generation School in Providence, RI in the early 2000s, I became very interested in the EGSA Education Programs. As our Association continues to develop its education programs, there are many balls in the air. With that said, it is also an area where Members can truly make a difference. For those able to attend the Conventions, the Education Committee meeting is the place to be.

The EGSA Rowley School of On-Site Power Generation

First, our EGSA Schools have dramatically changed with the introduction of the Rowley Basic and Advanced Schools. Herb Daugherty, EGSA's new Manager of the EGSA Rowley School of On-Site Power Generation and his team of volunteer instructors are planning on a new curriculum with a 2015 roll-out. As you may already know, we have increased from 6 to 7 schools in 2014, offering an additional Basic School this year.

2,542 power generation professionals have attended these courses since 2000. We currently have 26 volunteer instructors – and we would welcome applications from Members who could teach:

- Generators, Basics and Advanced
- Governors, Speed & Load Controls
- Voltage Regulators
- Generator Instruments & Controls
- Bids & Specifications

If you are interested, contact Herb Daugherty (*h.daugherty@egsa.org*) for details and an Instructor Application Form.

Herb is winding down the completion an extensive Instructor Enhancement Program. Each EGSA Instructor has attended a special instructional webinar and has been evaluated by our third-party specialist via video recordings to help them enhance their teaching skills and improve the learning experience of those that attend the Rowley Schools.

EGSA Technician Certification

Our EGSA Technician Certification Committee is currently working on establishing a new level of certification, revising the program to add value. This Basic certification offering is very attractive to the US Military to provide service members with an equivalent civilian sector certification for those technical specialties which align with our generator technician certification program. This basic certification also provides an entry level certification opportunity so that distributors/service dealer technicians and others can gain a certification which allows them to meet contract specifications which require "certified" technicians to perform routine maintenance/service. The final outcome of this endeavor is expected late in 2014.

There has been quite a rapid acceptance of the value of Technician Certification during the past few years. I suspect that distributors located in States where they are the only ones with Certified Technicians are relishing their temporary exclusivity!

Full details about the current program are on the EGSA website, but note that:

Technicians do not need to attend a Rowley School to qualify, although the advanced school is recommended for those seeking to fill in their knowledge base to pass the advanced certification test.

They should use the Study Guide and review the reference book prior to taking the test. The member and non-member prices are on the test application form available on the egsa.org website. The prices for members are significantly reduced.

There are proctors to administer the tests in every State - and probably within easy driving

Continued on page 12

Craftsmanship, engineering skill and unmatched reliability, focused on long-term customer satisfaction.

UAI
QUALITY

Quality is a strength our customers count on.

United Alloy Designs, Engineers, Welds, Fabricates and Powder Coats...and earns your trust.
Quality and strength define everything about United Alloy, from our technical expertise and process oriented manufacturing to the world class, certified solutions we create for the backup power industry.

Add to that our commitment to investing in the future of UAI, it's no wonder that global Fortune 100 OEMs come to UAI to tackle their toughest challenges. We invite you to join this distinguished group and experience the ways we can make a positive contribution to your bottom line.

ISO 9001:2008

UL LISTED

c UL us LISTED

Certified WBENC Women's Business Enterprise

UNITED ALLOY, INC.
engineered solutions, built strong

4100 Kennedy Road, Janesville, WI 53545
(608) 758-4717 • Fax: (608) 758-1272 • www.unitedalloy.com

©2014 United Alloy Inc. UAI 14-1

Herb Whittall
EGSA Technical Advisor
HWhittall@comcast.net

Codes & Standards

The IEEE Industry Applications Magazine for January/February 2014 has an interesting article starting on Page 16 titled, Reviewing Equipment Standards. The article compares IEC (European) Standards with IEEE/ ANSI and NEMA standards, mainly addressing the IEC 62271 series (that have to do with Switchgear) and comparing this IEC Series with IEEE C37 Series of Standards.

It is a long and comprehensive article dealing with additional subjects like Voltage Ratings and Tests; Temperature; Altitude; Pollution; Vibration and Seismic etc. If you are involved with switchgear under IEEE 37 and are expanding to the rest of the world (which may use IEC 62271), I suggest you read it.

Continuing with IEEE, Herb Daugherty provided an update on IEEE 1547 Standard for Interconnecting Distributed Resources. This Standard was adopted ten years ago and is now in the process of being reviewed and rewritten.

At a meeting in December, attendees were split into 3 groups (General Interest, Manufacturer and Power Producers), with each group discussing the revised standard's title, Scope and Purpose and then developing a Project Authorization request for IEEE to allow the new working group to start with a rewrite. Some of the items discussed were: adding interoperability to interconnection, changing distributed resources to distributed energy resources, safety and cybersecurity, communication standardization, maintenance considerations, islanding and expansion to higher voltage. Herb will be part of this rewrite group and hopes to begin work on the rewrite this spring.

NECA (National Electric Contractors Assn.) is rewriting their NECA 404-201 Standard for Installing Generator Sets. The scope of NECA 404 is as follows: *This Standard describes installation procedures for generators and related accessories and systems that are permanently installed for on-site standby or emergency power generation that are typically fueled by natural gas or diesel. Such generators may be defined as "emergency systems" or "legally-required standby systems" intended to supply power for emergency or life-safety applications in accordance with NFPA 70, National Electric Code.*

I have been asked to participate in this rewrite, so if anyone who uses this Standard has comments I should know about, please contact me.

UL has issued UL 943C that establishes 3 new classes of GFCIs (Ground Fault Circuit Interrupters) for heavier duty circuits. Class A GFCIs are still required for all 5 amp and 20 amp 125 volt circuits with a GFCI trip amperage of 6mA.

These new classes are for higher voltage and amperage circuits. Class C is for circuits with no conductor more than 300 volts to ground (line to line voltage of 480 volts or less) Class D is for 600 volt systems. Class E is for systems similar to Class D but with special high-speed tripping required that eliminates the need for the oversized ground of Class D. The tripping amperage for class C, D and E is 20mA.

UL 943C was issued in 2009, but the required GFCIs were not available until 2013. There are other instructions as to what additional safety precautions need to be taken with using Class C, D and E GFCIs, but you should contact UL if you need that information.

ISO/TC 70, the International Standards Organization that makes standards concerning Internal Combustion Engines has released a revised business plan. The United Sates is 1 of 164 countries belonging to the ISO. TC 70 has 12 voting members and 8 observer members. SAE (Society of Automotive Engineers) is the organization that votes for the USA on the ISO. I am one of the members of the voting panel that directs the SAE on how to vote on their various standards. In the business plan are several strategic objectives. The one that most applies to EGSA members is labeled a. It says "To ensure that Internal Combustion Engines (ICE's) are designed, used and conform to recognized environmental and safety standards."

The ISO TC 70 controlled standard series most applicable to EGSA are:

ISO 7967- Reciprocating internal combustion engines - vocabulary

ISO 8178 – Reciprocating Internal combustion engines - exhaust emissions

ISO 8528 - Reciprocating internal combustion engine driven alternating current generating sets

You would think that US manufacturers would be interested in what the ISO Standards say, yet only 3 of 12 people voted on the changes to the above 3 standard series, including changes to ISO 8178 Part 7 - *Engine family determination* and ISO 8178 Part 8 – *Engine group determination* in which the voting closed last year. ■

The best line of bypass/isolation switches offers a choice in bypass operation

Most bypass switch manufacturers offer switches with no-load-break bypass operation.

Only Russelectric, however, offers a full line of switches in a choice of no-load-break bypass operation (for bypass without load interruption) or load-break bypass operation (for fast, foolproof bypassing — regardless of the condition or position of the ATS).

Don't let a switch manufacturer make your choice of bypass operation for you... Insist on Russelectric.

Made in USA

www.russelectric.com
1-800-225-5250
An Employee-Owned Company
An Equal Opportunity Employer

Russelectric
POWER CONTROL PEOPLE YOU CAN RELY ON

Continued from page 8

distance of your facility. Please contact *EGSA@Ferris.edu* to help you locate the closest proctor to your location. Remember to provide your contact information and location in your email.

With the introduction of a new technician awards program, named the EGSA Technician of the Year Award (TOYA), our Association will reach an even greater number of generator technicians in North America with the value of EGSA Technician Certification. The TOYA program is being rolled out in 2015 by our Distributor Dealer (DD) Committee. "The DD Committee is passionate about making the TOYA program a success! This effort will allow the DDs to recognize the technicians out there who are doing the best job and on the flip side, brand our certification program to technicians who are already in our industry that may not know anything about EGSA!" added Bob Piske, DD Chair and President of Arizona Generator Technology, Inc.

On-Site Power Generation: A Reference Book, the 5th Edition

With almost 40 chapters and a ¼ million words, the next Edition (5th) of *On-Site Power Generation: A Reference Book* will be a leap forward from the present edition. All chapters are being reviewed, updated for new technologies or totally re-written. Some new chapters will be added, some will be unchanged (the production method for volts and amps, for example, has not changed very much!). The procedures for author and reviewer selection were well established by the late George Rowley during preparation of the 4th Edition.

In the belief that it is better to get it right than to get it fast, our expectation is that it will be ready within 12 months. In the meantime the 4th Edition remains the highly valuable resource that it was designed to be. Copies are available for immediate shipment.

We are very enthusiastic about the existing educational programs and those under development. Meeting our Member's educational needs and making constant improvements is our mission.

Please do not hesitate to let me know if you have any questions about our programs or if we can help in any way. *M.Pope@egsa.org.* ■

ENCLOSURES & GENSET PACKAGING EXPERTS

UNIVERSAL

At Universal Acoustic & Emission Technologies, we've recognized the increasing demand for engine customers like you to work with a single contact for all of your engine or generator set silencing needs. That's why we've **acquired Ojibway Enclosure Systems,** a well-known manufacturer of sound-attenuating enclosures and provider of generator set packaging services.

Universal AET and Ojibway have a long history of working together, and we now work side by side developing cutting-edge, durable designs for our customers. The new Ojibway Enclosures by Universal will bring custom-designed enclosures and packaging under one roof so we can efficiently manage your entire project directly, saving you time and money.

Learn more at universalAET.com/enclosures

GET STARTED ON YOUR NEXT PROJECT TODAY!
Email us: enclosures@universalAET.com
Call us: (608) 718-1377

OJIBWAY ENCLOSURES BY UNIVERSAL

1925 Highway 51/138 • P.O. Box 411 • Stoughton, WI 53589 USA

Do DC Generators Offer Fuel Economy Advantages Over AC Generators? Answers for the Telecom Industry

By Marcelo Algrain, Ph.D., Electric Power Division, Caterpillar Inc.

The purpose of this paper is to explain perceived differences in fuel consumption between AC and DC generator sets used in telecommunication (telecom) applications, but results are also applicable to other cases with similar load profiles. A review of the overall energy conversion process, from energy in the fuel to electricity consumed by the load, is presented to account for losses in both AC and DC generator systems, and to explain potential differences in fuel economy between the two systems. Fuel consumption test results are provided for four DC generator sets and one AC generator under identical loading conditions. An evaluation of the test data is presented, and conclusions are drawn on the validity of fuel savings claims by DC generators in small telecom applications.

Introduction

There are many contributing factors to the total cost of operating an electric power generation system. Fuel consumption is one of them. In some applications, such as small, remotely located telecom sites, fuel consumption can be a significant portion of the overall operating cost. Recently, DC generators have been identified as providing significant fuel economy advantages over AC generators in certain telecom applications. This paper scrutinizes the validity of such claims.

The debate on AC versus DC has been around since the days of Edison (DC) and Tesla (AC). Predominantly, it has been in the context of transmission and distribution of electricity, but it is now surfacing in other areas such as Uninterruptible Power Supply (UPS) systems, and most recently in power generation for telecom applications.

Although several very high-voltage DC transmission lines exist, as well as niche markets for DC UPS systems, it is undeniable that AC systems are the preferred choice for almost any kind of electric power system. So what is behind the recent exuberance on DC generators for telecom applications? The core issue is fuel consumption. Do engine-driven DC generators really save fuel over their AC counterparts? Some claim fuel consumption could be cut by more than one-half. How could this be possible?

To save fuel, a DC generator would need to be more efficient than an AC generator. If it were to cut fuel consumption by one-half, it would need to be twice as efficient as an AC generator. By and large, the efficiency of a 10 kVA AC synchronous generator is typically in the range of 80 to 95 percent (from worst-in-class to best-in-class). To cut fuel consumption by 50 percent over an AC generator, a DC generator would need to be 160 to 190 percent efficient. Obviously this could not be the case as efficiencies over 100 percent are unattainable. What then, is really behind the perceived fuel savings on a DC generator set?

To delve further into the fuel savings issue, let us consider the total amount of energy involved when one liter of diesel fuel is consumed to power a DC load. Figure 1 shows a schematic representation of an AC generator set comprised of a diesel engine and an AC synchronous generator, powering a DC load through an AC to DC rectifier. The thermal efficiency of a diesel engine, operating at peak fuel economy conditions, would be around 40 percent.

Likewise, the efficiency of an AC synchronous generator would be about 90 percent, and a good rectifier would be around 95 percent efficient. The typical net heating value of No. 2 diesel fuel is approximately 130,000 BTU per gallon, or 36 million Joule per liter, or 10 kWh per liter. If a diesel engine consumes one liter of fuel, it would produce approximately 4 kWh of mechanical work, the AC generator would produce 3.6 kWh of electrical energy, and the rectifier would deliver 3.4 kWh of electricity to the DC load. (See Figure 1.) Thus, 3.4 kWh is the total amount of electrical energy consumed by the DC load after consuming one liter of diesel fuel in the AC generator set.

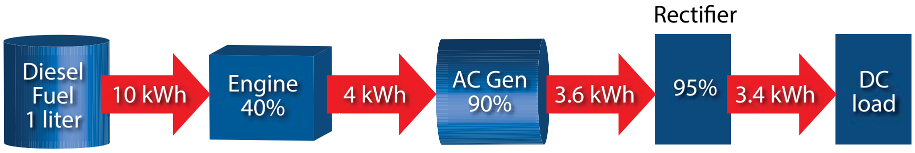


Figure 1: AC Generator Set Powering DC Loads

The question is, if the same load were to be powered by a DC generator set, how much fuel would be consumed? Some claim that a DC generator would cut fuel consumption in half. If that were to be the case, using the previous example, only one-half liter of diesel fuel would be consumed instead of one liter. To validate or refute this claim, let us examine the overall energy conversion process in more detail by comparing the individual conversion steps in Figures 1 and 2.

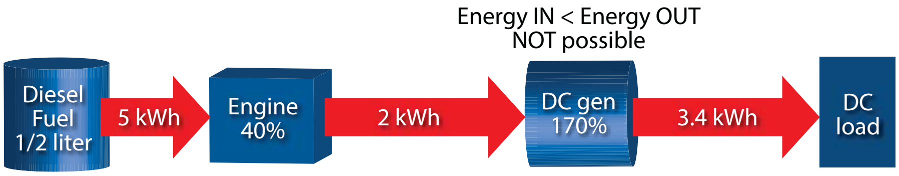


Figure 2: DC Generator Set Powering DC Loads

New! GenStart
NFPA 110 Lv l Compliant replacement for Basler® DGC500, Generac® "E" Panel & more - $499

Replacements for over 65 Onan® Control P/Ns - Obsolete & Current - Save Hundreds on OE pricing!

Rebuildable "Universal" Voltage Regulators
·All Built in the USA - 2 Yr. Warranty!

ATS & Generator Cont. Reman Service
ASCO® Basler® Cat® Generac® Onan® Kato® Kohler® Zenith® & more; 1 Yr. Warranty.
·Contact us for a Discount Price List!

Put the G-MAN On the Case!

FLIGHT SYSTEMS
207 Hempt Road, Mechanicsburg, PA 17050
Toll-Free: 800-403-3728 Fax: 717-590-7327
www.flightsystems.com

Load Banks Direct
Built to Last

LBD is your Complete Solutions Provider

Portable
Stationary
Radiator Mounted
Trailer Mounted

Load Banks Direct is a leading manufacturer of high-capacity load banks. We are redefining the load test market with an innovative line of Portable, Stationary, Radiator-Mounted and Trailer solutions - built to last.

855.LBD.CALL sales@loadbanksdirect.com
www.LoadBanksDirect.com

Many popular sizes NOW IN STOCK!

LBD LOAD BANKS DIRECT

Figure 2 shows a schematic representation of a diesel engine driven DC generator set. The only difference between Figure 1 and Figure 2 is that the AC synchronous generator and rectifier have been replaced with a DC generator. If the fuel used by the DC generator set is only one-half of what its AC counterpart would use, only 5 kWh of energy would be available to the engine, and its mechanical output would be limited to 2 kWh.

However, to power the same DC load, a total of 3.4 kWh of electricity would be required from the DC generator. Then the electrical energy out of the DC generator would need to be 1.4 kWh higher than the 2.0 kWh of mechanical energy used to produce the electrical output. It is well known that any energy conversion process that produces more energy than it consumes violates the Principle of Conservation of Energy. The DC generator would need to create energy, and its efficiency would need to be over 100 percent which is not possible. Equivalently, if we think in terms of power instead of energy, because it is physically impossible for the output power to be higher than the input power, the science does not support the rhetoric being advanced by DC generator advocates in the telecom industry.

Fuel Consumption Test Results for AC and DC Generation Systems

The preceding analysis demonstrated that DC generators by themselves cannot reduce fuel consumption by the amounts being claimed. However, credible organizations have reported large fuel savings when using DC systems. Furthermore, this subject has been at the forefront of discussions at premier telecom industry gatherings such as the GSMA World Congress. There must be some validity to what is being reported. But what are the true root causes?

To gather factual information and support it with hard data, Caterpillar engineers conducted comprehensive fuel consumption tests on four units marketed as DC generator sets, and one additional unit comprised of an AC synchronous generator set and a full output AC to DC converter (rectifier) powering the same DC loads. The specifications of all five units are not identical, but collectively they are representative of market-leading choices suitable for application in small telecom sites. Figure 3 provides the fuel consumption test results for all five units. The data was normalized with respect to the fuel consumption of Unit 5 at a load of 10 kW (the 100 percent point).

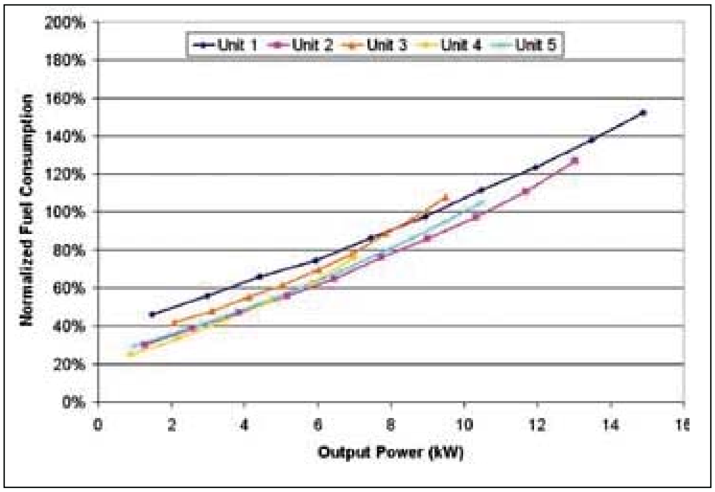


Figure 3: Fuel Consumption Test Results

Examining Figure 3, it is seen that most of the fuel consumption data points, for all units tested lie within a 15 to 20 percent wide band formed by the dark blue (◆) and the magenta (■) traces. These two traces correspond to the fuel consumption of Units 1 and 2, respectively, which are both marketed as DC generator sets. The fuel consumption traces for Units 3, 4 and 5 (AC generator set included) are for the most part in close proximity to one another relative to the first two.

The data shows that there is a wider spread in the fuel consumption between two DC generator sets (Units 1 and 2) than there is between the AC generator set and all DC units respectively. Hence, the differences in fuel consumption between all these units are not related to what type of generator set was used. There are also other factors at work. Optimizing system components, such as engine selection, reducing parasitic losses through gains in cooling system efficiency, and overall system integration and controls play a larger role in improving fuel economy than whether an AC or DC generator is used.

Good design would exploit the best attributes of either AC or DC technologies to develop a generator set that would optimize fuel consumption for a targeted application. This can be achieved with either technology. DC generators are not inherently more efficient than AC generators, and vice versa. The data provides solid evidence that the differences in fuel consumption between AC and DC generators are not significant. The reported large fuel savings attributed to DC generators remain unaccounted for.

Accounting for Perceived Differences in Fuel Consumption between AC and DC Generation

The preceding section demonstrated that there are no significant differences in fuel consumption between AC and DC generator sets when powering the same constant load. However, the way generator sets are used in telecom applications varies. In areas where the grid connection is reliable, the total number of running hours is low and fuel consumption is generally not a concern. On the other hand, in off-grid applications, or where the grid is frequently unavailable for long periods of time, running hours can be very high and fuel consumption is a major issue.

In the later cases, telecom sites typically operate AC and DC generator sets in different modes. AC generator sets run continuously, or for the duration of extended outages. DC generator sets run intermittently. The reason DC systems can run intermittently while constantly powering the load is that they have batteries, which provide built-in energy storage. The batteries provide power to the load when the engine is not running. When it is time to recharge the batteries, the engine runs as needed, depending on the capacity of the battery pack.

In contrast, the AC generator set runs continuously. Could it be then that running an engine intermittently provides a fuel economy advantage over running it continuously? The answer would be obvious if they were producing the same amount of power while running, but that is not the case in a telecom application. The AC generator set running continuously would operate at a lower power level than the DC generator set operating a few times a day. The total amount of electrical energy produced by the two would be the same over a one-day period, but the running power level would not be.

To illustrate this important point, let us consider an off-grid telecom site with a constant load of 1 kW, which this is representative of a small telecom site. The total amount of electricity consumed by the telecom equipment over a one-day period would be 24 kWh. Since the efficiencies of AC and DC generators are comparable, let us ignore the electrical losses on both and focus on the mechanical power required from the engine in each case.

For the DC generator set, let us further assume that it runs three times a day for one hour to recharge batteries. We will assume battery charging efficiency is 100 percent – a very idealized case but suitable for this comparison. Then, the engine on the DC generator set would run at an output power of 8 kW, three times a day, for one hour each time, to produce 24 kWh in a one-day period. In contrast, the engine on the AC generator set would run at a 1 kW output for 24 hours to power the telecom load. The typical rating of a diesel engine found at a small telecom site is around 10 kW. Thus, the engine load would only be 10 percent of its rated value in the AC generator case, and 80 percent in the DC generator case.

The question then becomes, would an engine loaded at 10 percent of its rating for 24 hours consume more fuel than the same engine loaded at 80 percent for three hours? To answer this question, one must review the brake specific fuel consumption (BSFC) curve as a function of engine load.

Figure 4 shows a normalized BSFC curve for a small diesel engine, with typical characteristics. The 100 percent BSFC value corresponds to the best fuel economy point obtained at 80 percent load (see red circle). It is clear that when an engine is lightly loaded, its fuel consumption is significantly higher than when operating near its rated output. In our example, an AC generator set operating at a 10 percent power level would consume over twice as much fuel as a DC generator set operating at near peak fuel economy conditions.

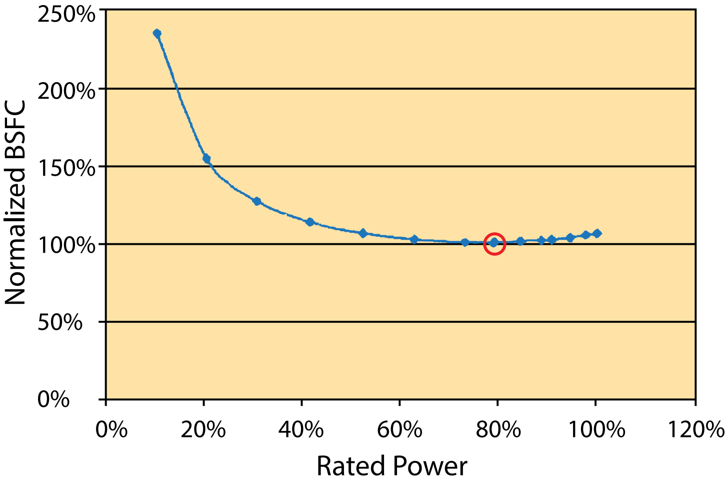


Figure 4: Normalized BSFC Curve for Generic Diesel Engine

Hence, the primary reason fuel savings have been reported in DC generator sets is that their engines, when run intermittently, operate at a much higher loading condition where fuel economy is considerably higher. The same effect can be attained using an AC generator set if a battery is added to it, and it is run intermittently. Alternatively, the fuel efficiency of the AC generator set could be significantly improved if the engine was not so grossly oversized for the small telecom application considered in this evaluation. With all other things being equal, there would be no tangible differences in the fuel consumption of a generator set regardless of whether a DC or an AC generator is being used if they are both loaded in the same manner.

Battery-Hybrid Generator Sets

In the preceding section, it was shown that an engine running continuously at very light loading conditions leads to poor fuel economy. In addition, prolonged operation at low loads is detrimental to engine life, increases maintenance cost and negatively impacts reliability.

To avoid these problems, an engine-driven generator set needs to be properly sized with respect to the expected loads, both peak and continuous. Most manufacturers offer sizing tools to aid in the proper selection of generator sets to match them to the application, optimizing equipment value for the owner. These sizing programs take into account running loads, peak loads, motor starting requirements, tolerance to voltage sags, frequency dips, etc.

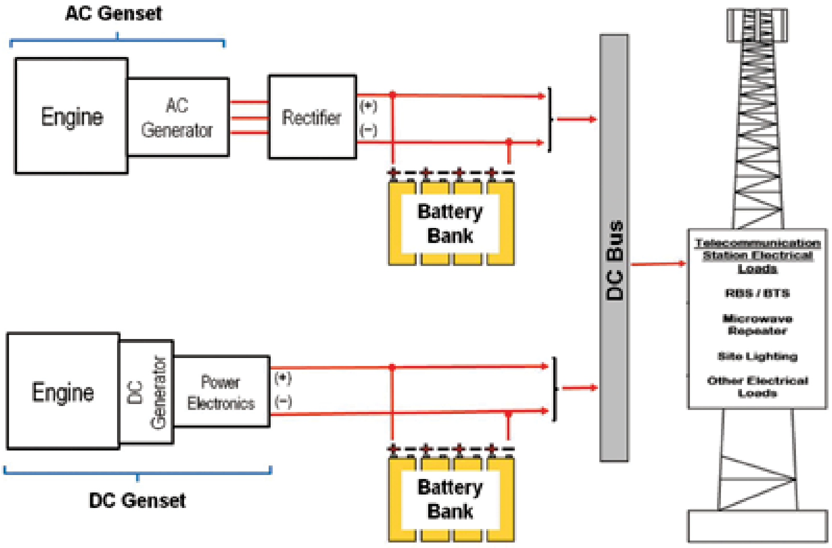


Figure 5: Battery-Hybrid Generator Sets (both AC and DC versions)

In some cases, because of conflicting application requirements, it may be unavoidable to have a large ratio between engine rating and continuous running load. This is typically the case in small telecom sites. For these lower power applications, a hybrid power generation system incorporating energy storage into a generator set provides an attractive solution for reducing fuel consumption.

Figure 5 shows a schematic representation of a battery-hybrid diesel generator set. Both AC and DC variations are shown in the figure. In either of these configurations, the engine would run intermittently during the battery charging cycle. Hence, the engine load profile would be the same for both cases, and there would be no appreciable differences in fuel consumption between either AC or DC hybrid systems. Also, in spite of battery upkeep, there would be an overall reduction in maintenance cost because of extended engine service intervals for AC and DC hybrid systems – running hours accumulate over a longer calendar period since the engine runs intermittently. In many cases, the operational cost of a hybrid system would be lower than that of a comparable generator set-only system in lower power telecom applications.

Another misconception about DC generators is that they do not require electronics. That may have been the case in the early days of the technology when brushes and mechanical commutators were used in their construction. Modern brushless DC motors and generators now use power electronics in place of brushes and commutators. These electronic devices make it possible to control higher speed generators, tightly regulate voltage, improve power quality and reduce switching losses.

A potential disadvantage of using a DC generator in a telecom application would be the lack of available AC power at the site. Most peripheral equipment at a site runs on AC power, and if only DC power is available, an inverter would be needed to supply the ancillary power for AC equipment.

The decision of whether to select an AC or DC generator should be based primarily on the load profile at the site, mixture of AC and DC loads, desired system complexity and cost. Either choice, when properly made, is likely to yield comparable fuel consumption. It should also be noted that fuel consumption alone, although often of critical importance, may not give a complete picture of the overall operational costs of a power system. Other factors, such as service intervals, scheduled maintenance and the cost of parts and labor, should be taken into account when selecting the type of generator set that best suits the application.

Summary and Conclusions

There is an ongoing debate in the telecom industry about DC generators providing a fuel economy advantage over AC generators. To validate or reject the hypothesis that DC generators save fuel, Caterpillar engineers conducted fuel consumption tests on four engine- driven DC generator sets, and one AC generator set with a full output rectifier. All units were best examples of what would be currently available in the marketplace for telecom applications.

The data provides solid evidence that under identical loading conditions, there are no significant differences in fuel consumption regardless of whether an AC or a DC generator is used to power the same DC load. In addition, theoretical examination of the overall energy conversion process for both AC and DC engine-driven generator sets proves that the large reductions in fuel consumption claimed by DC generator advocates are false.

It also was shown that the higher fuel consumption reported for some AC systems is caused by operating a diesel engine continuously at extremely light loads where fuel economy is poor. It is not related to generator technology.

The underlying reason DC systems have a perceived fuel economy advantage over AC systems is that they complement the operation of a diesel engine with energy storage via batteries. The batteries enable the power system to run the engine intermittently at higher loads for shorter periods of time during the battery charging cycle. Intermittent loading of the engine near its rated value, instead of loading it lightly continuously, significantly improves average fuel consumption and reduces operational cost. Comparable benefits can be attained using an AC generator set if an energy storage battery is added to the system, along with a rectifier.

In short, with all other things being equal, there will be no tangible differences in the fuel consumption of a generator set regardless of whether a DC or an AC generator is being used if they are both loaded in the same manner. ■

About the Author

Marcelo Algrain, Ph.D. is the Engineering Technical Steward for the Electric Power Division of Caterpillar, Inc. He has been with Caterpillar since 1997, holding engineering management and research positions in the Electric Power Division as well as the Technology and Solutions Division. Marcelo27

has been responsible for generator set control system developments, systems integration initiatives, and new technology explorations. Algrain holds 15 patents and has over 40 scientific publications to his credit.

The MIRATECH team has been solving emissions challenges in the gas compression industry for **more than 20 years**. As a result, our customers are **all over the world**. The one thing they share in common is that they rely on us to provide their emissions solutions.

It's the MIRATECH way.

MIRATECH

EXPECT TO PERFORM
800-640-3141 | MIRATECHCORP.COM

SOLUTIONS • CATALYSTS • HOUSINGS & SILENCERS
CONTROLS • FABRICATED METAL • SERVICE

protecting technology and the world

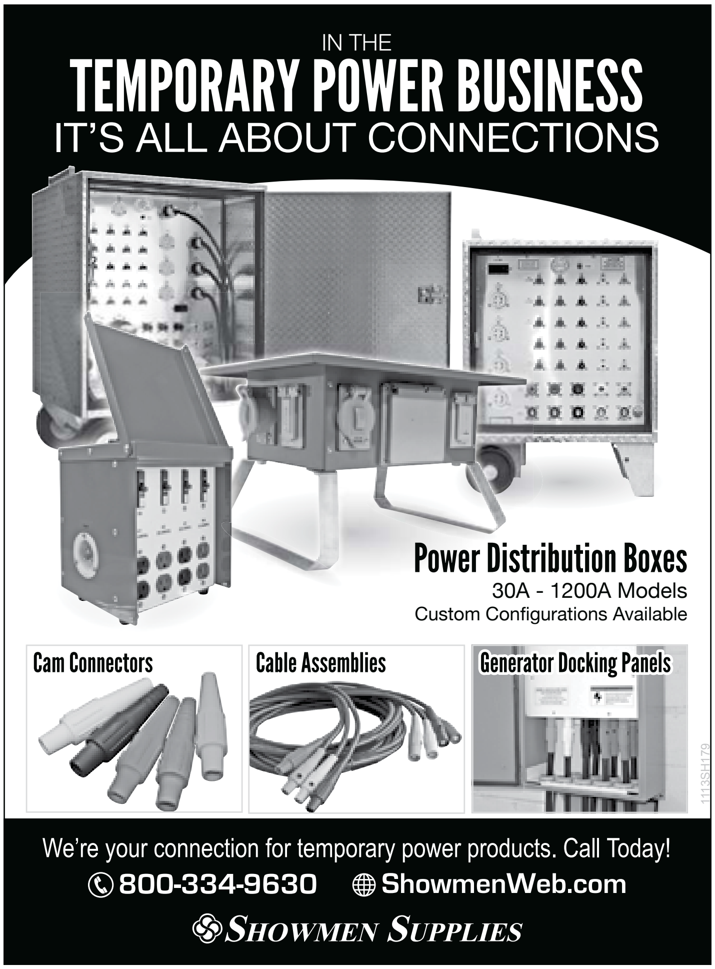
pritchard brown

- ISO-9001 Certified
- 70,000 ft² of manufacturing space
- Strategically located for domestic and worldwide markets
- Over 65 years of experience
- Turn-key systems available
- Available Certified IBC Seismic Compliance
- Professional sales and engineering staff
- High performance, maintenance free materials
- Unparalleled customer service
- Expertise in code compliance, extreme sound attenuation and challenging applications

EGSA Electrical Generating Systems Association
Like Us

BALTIMORE, MD

800.231.2258
WWW.PRITCHARDBROWN.COM



IN THE
TEMPORARY POWER BUSINESS
IT'S ALL ABOUT CONNECTIONS

Power Distribution Boxes
30A - 1200A Models
Custom Configurations Available

Cam Connectors
Cable Assemblies
Generator Docking Panels

1113SH179

We're your connection for temporary power products. Call Today!
800-334-9630 ShowmenWeb.com
SHOWMEN SUPPLIES

Best Practices In Electric Power System Testing For Improved Availability

By Mark Siira | Director of Business Development – Technology Strategy, ComRent International

This document is a guide for operators of electric utilities at any level. Using these practices will help to improve reliability, availability, and efficiency of the primary and backup power supply systems at mission critical facilities. Testing is commonly undertaken at different levels during the commissioning of a substation depending on the critical nature of the equipment installed and the effect of downtime on the facility owner's business.

After many years of experience in commissioning and load testing generators, the best practice would be to obtain an experienced professional to design the test (such as a commissioning agent), integrate testing into the project plan, plan to test all of the subsystems that will affect the performance of the electric power system, and use innovations in load testing that produce actionable information and confidence in the validation as it is obtained.

Trends that Drive the Increasing Importance of Load Testing

Although the frequency and breadth of load testing upon the commissioning of a substation or critical facility power system has increased in the last 15 years, there are several trends that are driving this to an increased level of importance.

a. Changing Interconnection Standards

Interconnection standards for connecting a local electric power system to the electric grid were developed in the late 1990s through the collaboration of electric utilities industrial facility owners, regulators, and technical consultants. The passage of IEEE 1547 – "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems" leveled the playing field and gave a clear path to what was needed to increase the reliability and availability of the local power system by enabling synchronization with the grid and multiple connections from the utilities' distribution or transmission system.

In late 2012, standards-making organizations collaborated once again on a modification of this standard, which allows voltage regulation and frequency regulation at the point of common connection (PCC). To support this, UL is developing safety standards for a "special purpose utility interactive inverter" in addition to standards included in UL1741. This is a significant change in the typical system topologies that were used in the past. These topologies will increase again the complexity of power systems and critical facilities, but also drive added revenue streams from the exchange of ancillary services such as power factor correction, voltage regulation, and frequency regulation

b. Micro-Grids and Complex Systems

Micro-grids are being used as a solution in areas where power quality and reliability is low, such as in remote areas and in campus settings. The complexity and interaction of multiple loads and sources will drive the increased importance of load testing in the actual environment.

Interoperability of Software and Communication

With the EPS, a roadmap and guideline to achieving the "smart grid" was enacted in 2009 which was valid through 2011. A collaborative effort from electric utilities, standards making organizations, and industry produced a guide for interoperability of the electric power system with communication technology and information technology (IEEE 2030 - 2011). This guide mapped the communication protocols and data flows required to perform the functions on the grid and within the customer's facility. Over time, this interoperability will result in more common modular approaches to monitoring and control and information exchange related to the electric power system.

Role of Load Bank Testing

Load testing should be performed at each critical point at the substation

After individual components (controllers, connections, etc.) in the system have been verified, best practice is to test the system as whole by applying Load where the system is designed to see it in Normal operating conditions. For High Voltage Utility Scale Systems, the best practice is to apply enough load so Current Sensors (CT's) can operate. This allows testing of protective relays and communications.

Why Load Bank testing is becoming a requirement in all critical power systems

A primary focus of an operator of a utility distribution or transmission system, is to Reduce Risk for the customers by providing electric power at a high level of availability. Availability is the percentage of time that a system is available to perform its function(s), this variable has been the focus for all operators of critical electric power systems. Table 1 highlights a trend towards increasing availability. In the 1990s, the standard for availability was " five nines", or three minutes of downtime per year. The current expectation is "seven nines", or three seconds of downtime per year.

Critical Facility Expectations	Availability	Hours of Downtime* (Based on a year of 8760 hours)
	0.9	876
	0.999	8.76
1990s	0.99999	0.0876
Current	0.9999999	0.000876

Table 1

Correlation Between Maintenance and Testing and Failures

The reliability of electrical equipment used in utility and industrial applications has been the result of an extensive survey conducted by IEEE. Each participant in the survey was asked to give his or her opinion of the maintenance quality in the facility. A major portion of the electrical equipment covered in the survey had a maintenance quality that was classed as "excellent" or "fair." The maintenance quality had a significant effect on the percentage of all failures blamed on "inadequate maintenance".

As shown in the following Table 2; of the 1469 failures reported from all causes, inadequate maintenance was blamed for 240, or 16.3% of all the failures. ■

Maintenance Quality	Number of Failures		Failures Due to Inadequte Maintenance (%)
	All Causes	Inadequte Maintenance	
Excellent	331	36	11.6
Fair	853	154	18.1
Poor	67	22	32.8
Total	1469	240	16.3

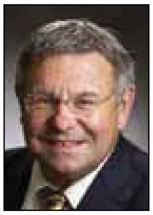
TABLE 2: Summary of Survey Conducted by the IEEE Industrial and Commercial Power Systems Committee

Use published reference material

One take away from this analysis that can lead to best practice by system operators is to use Published material as reference in planning inspection and maintenance practices. The available material can include:

- IEEE Gold Book - Design of Reliable Industrial and Commercial Power Systems.
- Utility practice of system coordination studies (IEEE 1547.7).
- NFPA® 70B, Recommended Practice for Electrical Equipment Maintenance. Provides specific information on how to set up a maintenance program.
- ANSI/NETA Standard For Maintenance Testing Specifications for Electrical Power Equipment and Systems.
- Three Load Testing Approaches to Minimize Downtime and Increase Efficiency of Local Power Systems -A Guide for Facility Managers (ComRent White paper).

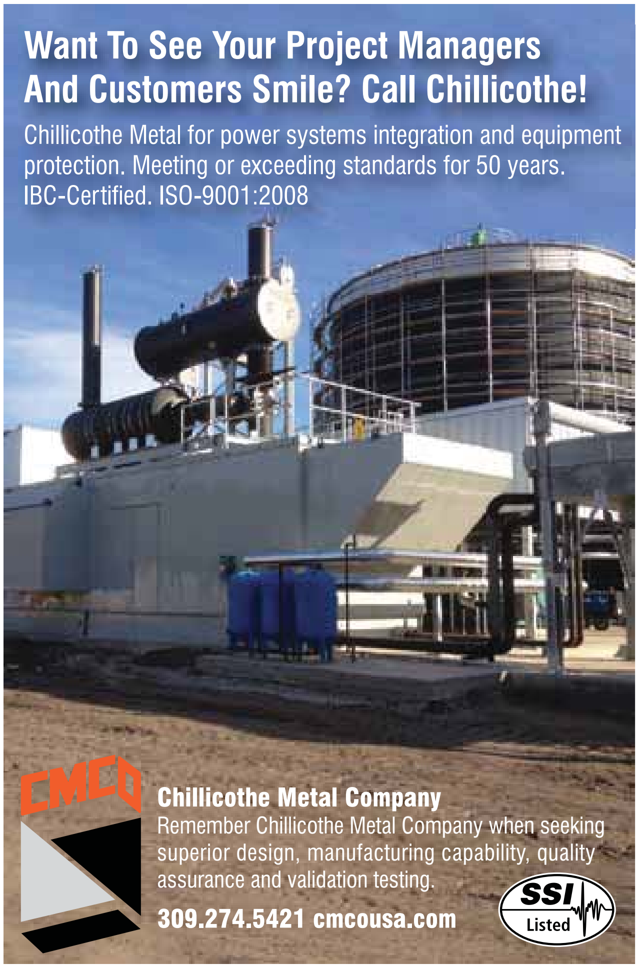
About the Author



Mark Siira is a senior member of IEEE and currently active in IEEE Interconnection and Smart Grid standards development. He is an member of the Standards Coordinating Committee 21 which establishes standards for Grid interconnection and smart grid interoperability, Working Group Chair of IEEE 2030.2 Guide for Interoperability of Energy Storage Systems, working group member for IEEE1547 amendment, Chair for Smart Grid Interoperability Panel (SGIP) Sub Group A for developing a standards roadmap, and a member of the UL Standards Technical Panel 1741 (Inverters) and 6171 (Wind farms interconnection).

Mark is the Director of Technology Strategy for ComRent International, a leader in load testing solutions for critical facilities and utility-scale systems. Prior to joining ComRent, Mark spent sixteen years at Kohler Company developing products and solutions for electric power, including an inverter and energy storage appliance, combined heat and power systems, critical power systems paralleling switchgear, microturbines and Distributed Generation strategies. Before joining Kohler, Mark worked for Rockwell International's Automotive business and General Motors Truck and Bus Group.

Mark has a Bachelor of Mechanical Engineering Degree from GMI Engineering and Management Institute (now Kettering University), and an MBA from Harvard University. He is a senior member of IEEE.


Want To See Your Project Managers And Customers Smile? Call Chillicothe!

Chillicothe Metal for power systems integration and equipment protection. Meeting or exceeding standards for 50 years. IBC-Certified. ISO-9001:2008

Chillicothe Metal Company

Remember Chillicothe Metal Company when seeking superior design, manufacturing capability, quality assurance and validation testing.

309.274.5421 cmcousa.com

Tracking Valuable EGSA Member Contributions

Our Members... Not Just Cogs in the Wheel

Certain quotes and sayings never get old. When was the last time someone said to you, “you get out of life what you put into it” or perhaps, “Nothing ventured, nothing gained”? These sayings especially ring true in an organization like EGSA, where all of the ‘heavy lifting’ gets done by the membership!

As we enter our 49th year as a formal organization, it is important to remember that EGSA was built on volunteer contributions. The commitments that each of you make, and keep, on behalf of EGSA leads to the betterment of our Association, as well as the On-Site Power Industry.

The chart on these next two pages tracks our member achievements and milestones. In order to be considered for a leadership role in our organization, EGSA has established by-laws that provide a transparent route for milestones that must be achieved in order to be considered. This list is our formal way of tracking Members' achievements and valuable contributions made on behalf of EGSA and to provide a roadmap for interested Members who wish to be considered for leadership roles within the Association.

We began this chart in earnest in January of 2012. We rolled out a program where EGSA Staff tracks and recognizes our members who make these formal contributions to the Asso-

KEY TO COMMITTEE CODES

AHNM	Ad Hoc Nominating Procedures
BG	Buying Guide
CS	Codes & Standards
CG	Co-Gen/Environmental
CN	Convention
CC	Communications & Conventions
DG	Distributed Generation Sub Committee
DD	Distributor/Dealer
ED	Education
EM	Electronic Media
GS	General Subcommittee
GR	Government Relations
GN	Green
IT	International Trade
MT	Market Trends
MB	Membership
MM	Military Mobile Power
NM	Nominating
PG	Power Generation Sub Committee
RB	Reference Book
SC	Scholarship
SLRP	Stratigic Long Range Planning
TS	Trade Show
TC	Tech Certification

Name	Executive Board	Director	Committee Chair	Committee Officer	Book Author	Past Award Recipient					School Instructor
						Timmler	Carpenter	Johnson	Wright	President's	
AHMED, MEHMOOD					x						
ALLEY, DAVE		2001 to '03	ED 2003 and before		x	2001					1998 to current
ANDERSON, LOWELL							1972				
ANDERSON, WAYNE					x						
ANDREWS, FRANCIS J.					x						
ARMSTRONG, JEFF					x						
BACHMAN, DON					x						
BARRIOS, DANIEL											2012 to current
BASLER, MATT		2005			x						
BASLER, MIKE					x						
BAUER, WARNER	2005 to '09	2002 to '04	CG 1993 DG 2003	CC 2004 & '05	x	1993	2011				
BEASLEY, VAUGHN	2011 to current	2008 to '10	DD 2009 to '11	DD 2006 to '08							
BENKE, JAMES					x						
BERG, BRIAN		2011 to '13	MT 2009 to '11	MT 2007 & '08							
BIRDSONG, BOB											2004 to current
BLACKMAN, DONALD					x						
BROWN, DAVID		2009 to '11	BG 2010 & '11								
CARR, RAYMOND											2007 to '10
CASTENSCHOILD, RENE					x						
CASTERLINE, LES			MT co-chair 2003 to '05 MT 2006 to '09								
CHELMECKI, CHRIS					x						
CHEN, SCOTT					x						
CHEN, SIMON					x						
CHRYSAM, WALTER											2007 to current
CLEWES, WILLIAM											2012 to current
CLOPHUS, PATRICK					x						
DALEY, JIM					x						
DAUFFENBACH, MIKE					x						2004 to current
DAY, BILL											2005 to current
DEMARTINO, NATHAN				CC 2011 to '13 DD 2013 to current							
DENNING, JESS											2012 to current
DETOR, NICK				GN 2009 & '10							
DUKE, KEITH					x						2001 to '07 2011
EVANS, KATIE		2013 to current	IT 2012 to current	IT 2011 to '12							
EVANS, STEVE		2012 to current	GN 2011 to '12	GN 2009 to '10	x						2010 to current
FENNELL, BRAD		2010 to '12	TS 2010		x						
FINNEY, NICK											2008 to '10
FRANKS, WYATT				GN 2013 to current							
GAINES, TERRY					x				2008		1999 to current
GARCIA, JOHN			MB 2012 to current								
GILLETTE, ALLEN					x						
GORE, JOHN					x						
HAALAND, OLE					x						1998 to current
HABIC, CHARLIE	2014 to current	2007 to '09	MB 2006 & '07 AHNM 2009 & '10	MB 2004 & '05 CC 2011 to '13			2012				
HAFICH, BOB	2013 to current	2001 to '03 2011 to '13	NM 2004 MB 2008 to '11 TC 2009 to '11	MB 2004 to '07 TC 2004 to '08		2012	2010			2012	
HAFICH, JOE		2008 to '10	DD 2003 to '08 SLRP 2007 to '13			2010				2012 (two awards)	
HAMILTON, RANDY					x						
HARTZEL, RON	2007 to '11	2003 to '06	CS 2003 to '07 EM 2006 to '10 SLRP 2007 to '13			2008				2012	
HAWKINS, JOHN			CS 2008 to '10	CS 2006 & 07							
HANDLIN, HARRY											2008 to current
HINDE, TIM					x						1998 to current
HODGKINS, RICK				DD 2011							
HOEFT, JOHN				MT 2012 to current							
HURTADO, DAVID		2001 to '03									
HOLTGREIVE, ROBERT					x						
HUNT, JAMES					x						
IBRAHIM, MOHAMMED					x						
ISKANDAR, DAVID					x						
JI, ZHENLIN					x						
JOHNSON, ANTHONY											2012 to current
JOHNSON, GERALD (Jerry)					x						
KACH, ED											1997 to 2010
KAEWERT, WILLIAM		2014 to current			x						2010 to current
KELLY, JR., JOHN	2008 to '12	2005 to '07	DD 1997 to '02 SLRP 2007 to '13				2013			2012	
KOEHMSTEDT, STEVE											2011 to current
KUSKO, ALEXANDER					x						
LAGREE, JAMES					x						
LATHROP, TODD		2012 to '14	CS 2011 to '13	CS 2007 to '10	x	2013					2005 to current
LAURENTS, DEBRA	2010 to current	2006 to '08	SLRP 2007 to '13	MB 2008 to '11 TC 2006 to '07						2012	
LAWRENCE, STEVE											2002 to '08 2011

Name	Executive Board	Director	Committee Chair	Committee Officer	Book Author	Past Award Recipient					School Instructor
						Timmler	Carpenter	Johnson	Wright	President's	
LECHTANSKI, JOE					x						
LESLIE, DAVID					x						
LEWIS, ROBERT			GR 2012 to current	GR 2009 to '11							
LEWIT, TANJA				IT 2012 to current							
LINTON, GREG	2006 to '10	2002 to '04	TC 2004 NM 2010 SLRP 2007 to '13							2012	
MEDORA, NOSHIRWAN					x						
MERRITT, MICKEY					x						
MCSHEFFREY, JASON											2011 to current
MCDONALD, BOBBY		2008 to '10		DD 2003 to '09							
MCDONALD, JIM			GN 2012 to current	GN 2011 to '12	x						2008 to current
MORRILL, MARTIN				CC 2013 to current							
MORRISON, RICK		2013 to current		DD 2011 to '13							
MUELLER, ROBERT					x						
MURPHY, DEBRA					x						
MURPHY, ED	2012 to current	2003 to '05	MB 2003 CC 2011 to current	CC 2007 to '10		2003					
NELAND, RICHARD				IT 2005 to '08							
NEWELL, GEORGE		1998 to '00									
OBERTO, LEE					x						
OLSEN, DICK			IT 2004 to '08								
OSHEFSKY, DAVID				MB 2013 to current							
PADDEN, MIKE			GR co-chair 2009 to '11								
PAFFORD, BILL		2004 to '06	CS 2001 & '02								
PATTERSON, DEAN					x						
PEARSON, DENNIS		2014 to current	ED 2011 to current						2013		
PEREZ, LARRY		2011 to '13			x						1995 to '98
PEREZ, LUIS											2004 to '08
PESCH, GUIDO					x						
PETTY, WALTER		2013 to current		GN 2011, MB 2013 to current							
PHILIPS, DAVE				GN 2013 to current							
PIERSON, BEN				ED 2011 to '13	x						
PISKE, ROBERT			DD 2011 to current	CS 2010							
PREVOZNIK, MARK					x						
PROSSER, AL		2008 to '10		MB 2008 to '11							
REDDING, WAYNE											2012 to current
RISSER, LYNDON				DD 2009 to current							
ROUNDTREE, DENNIS		2007 to '09	ED 2007 & '08	ED 2004 to '06		2009			2006		1998 to current
SAATHOFF, SANDRA					x						
SANDERS, RICHARD					x						
SCHAEFER, RICH					x						
SCHROEDER, RON		2010 to '12			x						1994 to current
SCHWARTZENBERG, JOHN					x						
SCOTT, RICHARD					x						
SIEBERT, MARTY					x						
SIMKOVIC, ROBERT											2012 to current
SIMMONS, ROBERT					x						
SLATER, LANNY		2013 to current	IT 2010 to '12	IT 2009 to '12							
STEELE, MARK		2010 to '12	GR co-chair 2009 to '11	GR 2005 to '08							
STOYANAC, STEVE	2001 to '05	1998 to '00	MB 2001 to '03 NM 2005 & '08 RB 2006 to '12		X	2000	2006				2008 to current
STUEBI, RICHARD					x						
STRINGER, DAVE				GR 2012 to current	x						
STRUSS, DARRELL				IT 2009 & '10							
SVENDSEN, JOHN				CS 2011 to current							
SWEENEY, ROB				TC 2009 & '10							
SZALZUS, MARK											2006 to '08
TAIT, WARREN					x						
TINGLE, KYLE		2012 to current	MT 2011-current	MT 2009 to '11							
VAN MAAREN, RICHARD					x						
VENHORST, BRIAN				CC 2013 to current							
VENNIE, DAVID				IT 2013 to current							
VILD, BRENT											2007 to '09
VISIOLI, ARMAND		2003 to '05	CC 2003 & '04			2005					
WALTER, BRAD					x						
WALTERS, GREG		2009 to '11		ED 2011 to current							
WATSON, DARREL											2006 to '09 2011"
WEIMER, RANDY		1996 to '98									
WEIN, TOM				ED 2013 to current							
WESTHOFEN, CHUCK				MT 2009 to '11							
WILHELM-VOLPI, LOREL				IT 2009 & '10							
WINNIE, PETER					x						
WITKOWSKI, MIKE		2009 to '11		CS 2008 to '13	x						2008 to current
WOLF, FRED					x						
WOOD, RAY			MM 2003 GR 1985, 2004 to '08			1985					
ZIRNHELT, JOE				MT 2011 to current							
ZHOU, XIN					x						

ciation and to our industry at large.

For obvious reasons, this list is not foolproof. We encourage members to speak up if our historical data is not correct! The chart is also housed real-time on our website *http://egsa.org/AboutUs/Leadership.aspx.*

The list includes our active participants, minus our retired members. Since 2012, anyone who has retired has been removed from the active list and placed on a retiree list.

We apologize if we have omitted anyone or left off a valuable member contribution. Please correct us if you find an error by contacting Kim Giles, EGSA Marketing Manager at k.giles@egsa.org.

Stay in tune with EGSA! Get involved. How about this one… "The time to venture is now." ■

KEY TO COMMITTEE CODES

AHNM	Ad Hoc Nominating Procedures
BG	Buying Guide
CS	Codes & Standards
CG	Co-Gen/Environmental
CN	Convention
CC	Communications & Conventions
DG	Distributed Generation Sub Committee
DD	Distributor/Dealer
ED	Education
EM	Electronic Media
GS	General Subcommittee
GR	Government Relations
GN	Green
IT	International Trade
MT	Market Trends
MB	Membership
MM	Military Mobile Power
NM	Nominating
PG	Power Generation Sub Committee
RB	Reference Book
SC	Scholarship
SLRP	Stratigic Long Range Planning
TS	Trade Show
TC	Tech Certification

Battery Selection is Key to Avoiding Dangerous Consequences at Utility Substation

By Jennifer A. Eirich, Marketing Manager, Utilities, EnerSys and Ryan Shadwick, Area Manager — Southwest Region, EnerSys

A large Utility in the Southwest works hard to deliver power to its 10 million customers every day. Using a network of 1,050 switchgear substations, it provides service to even the most remote locations. When weather disturbances —including lightning storms and occasional tornadoes — and routine maintenance threaten to interrupt service, this transmission and distribution (T&D) provider relies on a fleet of mobile trailers equipped with banks of batteries to power its switchgear. Choosing just the right battery to back up its switchgear is a critical decision with potentially dangerous consequences — a lesson that this Utility learned first hand.

Fifteen years ago, the Utility passed an edict suspending the use of Valve Regulated Lead Acid (VRLA) batteries for these applications due to several factors, including previous poor performance in the station environment, excessive maintenance requirements (as outlined in IEEE standard 1188) and the recommendation from a battery expert from Nuclear Electric Insurance Limited that VRLA batteries should not be used to provide DC power to protection and control circuits in the Utility's Protection Systems group.

Looking for a short-term solution, the Utility turned to its local discount battery retailer and purchased flooded deep cycle marine batteries for use in its battery trailers, mobile substation devices and at its remote motor-operated switching locations. At the time, the rugged, lead-acid marine batteries seemed like a cost-efficient alternative to the batteries marketed for stationary backup.

Unfortunately, the discount brand marine batteries were optimized for different work and storage parameters than the application required. This resulted in poor battery performance, with most batteries lasting just a fraction of their expected life cycle. When placed on a constant float charge, the marine batteries had a short life of just one to two years. In addition, the discount brand batteries sometimes overheated, spilling acid from their containers, prompting a search for a better solution.

The Solution

Working with the Utility's Battery Committee, EnerSys was asked to outline the application requirements and recommend a backup battery solution that challenged the Utility's 15-year ban on VRLA batteries. The solution was a 12V, 95 amp-hour type VRLA Absorbed Glass Mat (AGM) Thin Plate Pure Lead (TPPL) battery that promised 300-plus full depth-of-discharge cycles, a high rate of charge and discharge, two-year shelf life at 25°C (77°F) and superior deep discharge recovery. The Utility initiated a pilot project to replace the batteries in select trailers. After a six-year pilot period, the Utility finally agreed to lift the ban on VRLA batteries after it was demonstrated that the new batteries offered superior performance and longevity over the VRLA batteries of the past.

Today's VRLA AGM batteries have evolved and are superior to early generation VRLA batteries.

They are heat-tolerant and deliver on their promise of reliable long life in standby power applications. A longer service life, meaning fewer replacements and the cost associated with it, combined with higher reliability and fewer system failures, result in a lower long-term cost of ownership to the end user or equipment owner.

Advantages of Today's VRLA AGM Batteries

Following is an overview of the advantages of today's TPPL batteries:

Greater Power Density: Per unit weight, the power provided by TPPL products offers the greatest high-rate power density per energy dollar. Greater volumetric power allows engineers to consider more energy-supporting features or design smaller, lighter packages. At high-rate and pulse discharges, these batteries offer the best performance value in applications at less than 100 minutes of discharge.

Extended Cycle Life: Compared to other lead products that offer up to 200 full cycles, TPPL batteries provide 50 to 200 percent greater full cycle capability — delivering up to 400 cycles at 80 percent depth of discharge. In addition, the TPPL VRLA AGM batteries the Utility selected feature a high vent-pressure design to eliminate "dry out" failure mode from repeated recharges, a concern with standard VRLA batteries.

Longer Float Life: The new TPPL batteries offer a 10-year design life at 25°C (77°F), to 80 percent of rated capacity, compared to conventional sealed-lead batteries that have a typical standby life from three to six years. This increases to 15 years at 20°C (68°F).

Higher Stable Voltage Delivery: TPPL batteries have low internal resistance, resulting in high stable voltage delivery. The battery recommended for this application offers a flat discharge voltage profile similar to nickel cadmium, allowing them to discharge and recharge their power more quickly and efficiently and offer outstanding application flexibility. The TPPL construction also yields more watts-per-unit weight at high discharge rates.

Wider Temperature Range: At high temperatures, battery aging is accelerated. Conventional lead batteries experience internal moisture loss from venting, and the case side walls may become distended. With a temperature range of -65°C (-85°F) to 80°C (176°F), TPPL technology resists the chemical reaction that causes this aging more effectively than alloyed lead, allowing the battery to have a longer service life. TPPL batteries feature strong construction and do not experience these life-robbing conditions.

In fact, the batteries specified for the switchgear application have twice the delivered capacity of conventional sealed-lead batteries at temperatures below -20°C (-4°F), offering unparalleled low-temperature performance. Their electrodes are thinner, allowing more electrodes per cell, and greater electrode surface area than conventional sealed-lead, thick electrode batteries. As a result, they can reach a high state of charge in fast-charging applications in one-fourth the time of conventional, sealed-lead, thick plate batteries. This provides 50 to 100 percent overall better performance per energy dollar.

More Rugged Construction: The TPPL batteries specified for the Utility application are built for harsh usage with a UL 94V-0 rated non-halogenated flame-retardant case. They are shock and vibration resistant, and the TPPL batteries have a low grid-corrosion rate, providing the longest service life possible.

Faster Recharging: The TPPL batteries offer the shortest recharge efficiency of any sealed-lead battery on the market, achieving a 95% state of recharge in less than one hour without loss of capacity or electrolyte using conventional constant voltage charging techniques.

Orientation/Placement/Transport: The batteries are designed to be mounted and operated in any position, except inverted. This is an attractive feature, especially for less accessible areas. In addition, they are classified as "non-spillable batteries" and are exempted from the Department of Transportation's comprehensive packaging requirements as long as they are properly packaged and labeled.

Lead-calcium AGM vs. TPPL AGM

Where are TPPL batteries recommended?

TPPL VRLA batteries are recommended in applications where a conventional lead-calcium AGM battery is suitable but where the application also requires:

- Quick charge capability
- Longer float life
- Longer cycle life
- Wide operating temperature
- Long shelf life
- High rate discharge capability in a smaller package
- High rate discharge and excellent cycle life in the same battery

Extended Shelf Life: TPPL batteries have an extremely low self-discharge rate, thus providing extended storage capability while maintaining high state-of-charge levels for dependable operation. As such, they have a shelf life more than two times that of conventional lead batteries.

Overcoming Concerns

Despite the many positive features of the new TPPL VRLA AGM batteries, the Utility expressed concern about whether the new 95 amp-hour batteries in the emergency trailers would have the capacity required to replace the system's 200 to 450 amp-hour substation batteries. The good news is that due to the TPPL VRLA AGM battery construction, the batteries can supply 5,000 amperes of short-circuit current and 903.7 amperes of current for two minutes, exceeding any DC current requirements of the much larger amp-hour batteries used in the Utility's Protection Systems substations. Furthermore, the VRLA AGM battery can provide a constant DC load of 11.8 amperes for eight hours, supplying the DC constant load requirements of any of the Utility's station batteries for at least five hours when AC power is absent.

Demonstrating Return on Investment

Switching from the marine batteries to the application-specific TPPL batteries required a somewhat larger investment. However, a six-year pilot program demonstrated improvements in maintenance, performance and safety and longer service life, yielding an excellent return on investment.

During the six-year pilot program, the Utility took Ohmic readings of the jars quarterly to monitor voltage. There have been no problems with the batteries during this time. As a result, the Utility is gradually replacing the existing marine batteries with the new batteries and installing them in all new trailers as well. The Utility's Battery Committee now recommends that the TPPL VRLA AGM batteries be used in all new trailer installations and also as a replacement battery in all applications where the flooded deep cycle marine batteries are presently being used, such as mobile substation equipment (transformers, breakers, motor operated air switcher, etc.), battery trailers, and remote motor operated switching locations.

Choosing the Right Battery

As this Southwestern Utility demonstrated, all batteries are not alike, and there are risks involved in using a battery that is not optimized for the application. So how do you ensure that you have the right battery? The key is to know your application and its requirements. Here are several questions to consider when specifying batteries:

Environment: What is the "true" environment for the installation? It is important to fully understand the environment to which the battery will be subjected. Will it be exposed to high heat during the day or long periods of cold at night? Will the battery be in an enclosure and/or a temperature-controlled environment? Has the battery been tested and designed for these conditions?

Temperature plays an important role in battery performance and life. Batteries do not perform as well in temperature extremes. In general, operating at lower temperatures is less harmful to batteries than high temperature operation. As temperatures drop, capacity diminishes due to higher internal impedance. The battery size must be increased to compensate. If the voltage is not temperature compensated (increasing the charging voltage at lower temperatures), it is possible that the batteries may become undercharged, resulting in loss of capacity and life. IEEE recommends using the factor of 1, when sizing at higher than 25°C (77°F). High temperature operation, however, can shorten battery life. All lead acid batteries generate heat during charging. The charging current breaks down the water component in the electrolyte as the positive plate nears full charge, called electrolysis. Oxygen from electrolysis migrates and recombines into water, generating heat. Heat increases the rate of chemical reaction and results in higher charge current. This, in turn, causes gassing and heating, both of which significantly impact the life of the battery. Gassing occurs when bubbles develop on the plates during the charge cycles, creating less surface area. The accelerated gassing rate and recombination can result in dry-out and possible failure.

Duration: Does the application require the battery to stay on continuous or trickle charge? Is the battery designed for longevity under these circumstances? Will it have the starting power it needs when necessary? It is also important to know the end voltage, the battery voltage reached at the termination of a discharge. This is the temperature limit below which the connected equipment will not operate or is not recommended to operate.

Rechargability: Is the application subject to frequent outages? Does the battery have quick recharge capability to meet these needs? It is important to note that VRLA batteries require an overcharge of five to 10 percent. Users must be careful not to overcharge the battery. If the battery is given too much power, it may overheat, causing swelling or possibly even seepage of potentially flammable chemicals.

Undercharging a battery may also reduce runtime and life. Undercharging occurs when the battery is terminated frequently during the charging process. This diminishes the efficiency of the battery and prevent it from reaching its' full capacity due to 'charging memory.' It reaches a point where it begins to recognize a less-than-full battery as a full one.

Size: Is the battery properly sized for the application, accounting for typical depth of discharge? Does it fit within the system footprint? Should the battery be oversized? If so, the default design margin is 1.0.

Protection: Are the batteries properly concealed to avoid theft at the installation site? Are the individual cells monitored to protect against thermal runaway?

Conclusion

A large Utility serving seven million customers in the Southwest uses a fleet of mobile trailers equipped with banks of batteries to power its switchgear during storm-related power outages. In an effort to manage costs, the Utility purchased deep cycle, lead-calcium marine batteries to provide back up power. The batteries were not optimized for this application and, as a result, they sometimes overheated, spilling acid from their containers, ultimately failing for the application. EnerSys worked with the Utility to develop a profile of the application and, with this, recommended a TPPL VRLA battery optimized for this application. Unlike the other discount brand marine batteries, the TPPL VRLA battery demonstrated a much longer lifespan with a rugged construction, broader temperature range and low internal resistance. As a result, the utility passed an edict that all of the marine batteries will be replaced with application-specific batteries. Initial results from a six-year pilot program indicated that the added longevity offset the higher purchase price. The key to achieving similar results for other battery applications is to match the application to the best battery in terms of chemistry, design, size, power density, environment/temperature, service life and budget. ■

About the Authors

Jennifer A. Eirich is the Marketing Manager, Utilities, at EnerSys. Jennifer received her Bachelor of Science in Chemical Engineering from the Pennsylvania State University.

Ryan Shadwick has worked for EnerSys for the past 16 years, progressing from positions in production, formation and customer service to his current position in sales.

Phoenix Products

Your Premier Manufacturer of
Generator Enclosures and Base Tanks

High Velocity Hurricane Zone (HVHZ) Enclosures
- Florida Building Code #PDM825
- Miami Dade NOA #09-1216.04

California OSHPD Pre-approved Day Tanks
- 50 to 1000 Gallon Capacity OSP-0187-10

904-354-1858
phoenix.sales@phoenixprods.com
www.phoenixprods.com

phoenix products™
A Division of Ring Power Corporation

DESIGN • MANUFACTURE • INSTALLATION SUPPORT • SERVICE

When the power goes out, will the generator start?

GSV dealer benefits:

- Online dealer pricing
- Additional profits
- Recurring revenue
- Service income
- Enhanced customer satisfaction

GSV300 $399.00 *(MSRP)* **GSV200 $269.00** *(MSRP)*

Sell GSV300 for the ultimate user experience. GSV200 provides basic service inexpensively.

Generator Self-test Verifier©

www.GeneratorVerifier.com **866.660.3900**

Transtar® *Electric, Security and Technologies* 767 Warehouse Road, Suite C, Toledo, Ohio 43615

QUALITY IS NOT OPTIONAL

Hennig Enclosure Systems is committed to quality in every process, from sales through engineering, manufacturing, and service.

We believe that our customers want a partner that…

- **Is Attentive From "The Get Go" –** Our total commitment to customer service is unmatched in the industry. Our sales quotes are turned around at lightning speed with full attention to detail and at a price that can't be beat.
- **Provides Innovation & Customization –** With our experienced degreed engineers, Hennig can design anything you need from basic enclosures and tanks to fully customized models with every imaginable option.
- **Believes That Quality Is Not Just "A Given" –** Hennig is ISO 9001 certified, and our stringent quality standards must be met or exceeded for every process.
- **Won't Leave 'Em Hanging –** Our service and follow-up is unlike any other, with service centers strategically positioned throughout the United States, Canada, and Mexico.

Give us a call today and experience why Hennig Enclosure Systems should be your number one partner for your power packaging needs.

1-888-HENNIG6 (1-888-436-6446)
www.hennigenclosuresystems.com

CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2008 ANAB DNV

HENNIG® ENCLOSURE SYSTEMS

Having Trouble Receiving Your EGSA Emails?

We have, from time to time, received inquiries regarding difficulty in receiving EGSA emails. The reasons are varied and can be easily remedied and others are more complex. We have outlined some of the more common reasons below for your convenience.

Some simpler reasons for emails not appearing in your inbox:

Did you incorrectly type your email address when entering your contact information? Just one incorrect keystroke will cause an email to go to the wrong address and make it undeliverable.

Have you checked your Spam/Junk folder? Your spam filter could direct EGSA emails there. If, when you open your Spam/Junk folder, you see an EGSA email, simply open the email and click on "Mark as Wanted" in the tool bar above the email message. This will alert your email program that you want future EGSA emails to be directed to your inbox.

Have you or your company set up other filters? If you've set up filters, the message from EGSA might be going to a different folder instead of your Inbox.

Now, for the more complex reasons for blocked emails:

To resolve some of the more complex issues, it may be necessary to get your company's IT department involved. Companies employ filters and/or blacklists to protect you from unsolicited email; however, this can make it impossible to receive newsletters, announcements and promotions that you have requested. EGSA has set up a link on our website to help resolve this type of problem. We have even included a letter to help you communicate the problem to the proper department within your company to resolve it. Visit *www.egsa.org/Membership.aspx* for further details and troubleshooting. ■

Do you display the EGSA member logo on your website?

Membership is a two-way street! One of the privileges of EGSA membership is to identify yourself in the OnSite Power Industry as a trusted resource by using the membership logo on your company's advertisements, website, business cards or stationary.

Including the EGSA logo on your site lets people know that:

- Your company is committed to staying on top of the industry news that's important to your business;
- Your membership shows you have a voice and are committed to staying active within the onsite power community; and
- Your company sets itself apart from its competitors.

Be a part of the marketing efforts of your membership and let EGSA's reputation work for you! Please download the EGSA logo and proudly display it on your company's web site and collateral materials.

To get the logos, please visit: *www.egsa.org/Membership.aspx*. ■

Whether You Are Seeking New Talent or Looking for a New Career, We Make the Job Search Easier with the EGSA Job Bank!

This Process Allows Members to Control Their Listings

One of the great benefits that you enjoy as an EGSA Member is access to the Job Bank. Posted on the EGSA website and bi-monthly in each issue of Powerline Magazine, the EGSA job bank boasts more than 60 job postings at any given time. (Online & Print)

The EGSA Job Bank is managed exclusively online via our web site. We are giving you the power to directly manage your own job postings. Choose how long the ad should run, whether the ad should run in Powerline Magazine and edit it whenever you need to. This streamlined process means you manage your listings.

Online Job Bank The Directions Are Easy! To Post a Job:

- Log onto the job bank* at *http://www.egsa.org/Careers.aspx*
- Click on "Add New Job Opportunity."
- Fill in the job information

For your job posting, you will see "delete" and "edit" buttons below the posting. Use these if you need to edit the posting at a later date. (Ads run online for 60 days unless edits are made to update the listing.)

To review all of the career opportunities that our Members have available, simply visit www.egsa.org and click on the Careers tab! Remember - Job Bank postings are one of the FREE benefits of EGSA Membership.

EGSA Membership can save you money on job placement advertisements; show this article to your HR Department if this service is not one you are currently utilizing!

For questions, call EGSA staff at 561-750-5575 or visit *www.egsa.org/Careers.aspx* for complete instructions! ■

**To create an EGSA login, please visit www.egsa.org and click the green "register" link in the upper right-hand corner. The minimum information required is your name, company name, company email and the creation of a password. (The password must be 8 characters long, must contain letters and numbers and also include one uppercase letter)*

CRANKCASE EMISSIONS CONTROL!

DON'T WAIT
Eliminate Crankcase Emissions*

ON STATIONARY ENGINES 300 HP+
MUST BE COMPLIANT BY MAY 3, 2013
*99.97% EFFICIENT AT .3 µm and BELOW
4500 + HOUR CARTRIDGE-CHANGE INTERVALS

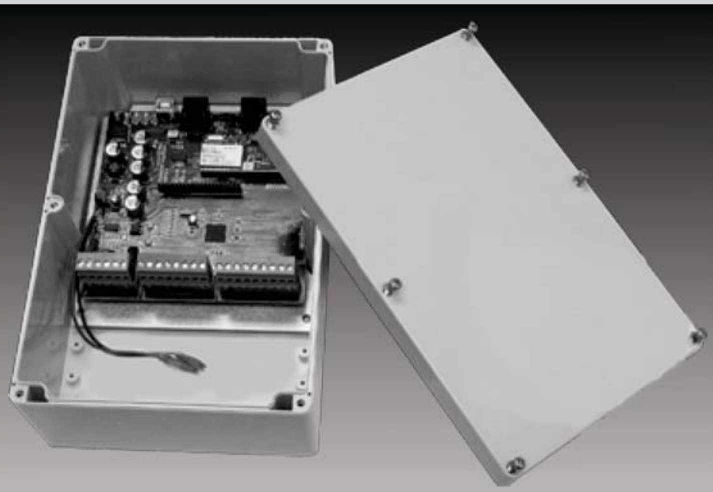
The Hilliard Corporation
100 W. Fourth St.
Elmira, NY 14902
Ph: 607-733-7121
http://www.hilliardcorp.com
E-mail: hilliard@hilliardcorp.com

Hilliard
HILCO DIVISION

GENTRACKER™
Generator Monitoring System

By Generator Solutions, Inc.

The only
TRULY UNIVERSAL
Generator Monitoring System
- ANY BRAND
- ANY SIZE
- ANY TYPE
- ANY AGE



- Easy to install
- No programming required
- Automatic Monthly Activity Emailed
- Notifications by e-mail and cellular text messaging
- Internet-based
- Remote starts
- Fuel Level
- Modbus connection
- Communication options: Cellular, GPS, Phone, Internet

www.Gen-Tracker.com

COLLICUTT ENERGY SERVICES

Another in Our Series of EGSA Member Company Profiles

COLLICUTT ENERGY SERVICES *www.collicutt.com*

Collicutt Energy Services designs, manufactures, and distributes various power generation packages in either stand-by, prime power, peak shaving or combined heat & power (CHP) applications. We have provided generators to hospitals, waste water treatment facilities, data centers, base camps that provide housing for thousands of workers, along with many more uses.

Collicutt was founded in 1986 by Steven Collicutt and started off as a service company that rebuilt and maintained industrial engines. The Company was built with service being a key business strategy and still today, our service department is renowned for its excellent customer service. With branches located in Los Angeles, Sacramento, San Diego, Costa Mesa, Honolulu, Anchorage, Red Deer, and Vancouver, Collicutt is well positioned to service their customer base in both the U.S. and Canadian markets.

Collicutt Energy Services, headquartered in Red Deer, AB, Canada, is one of the largest providers of Kohler Power Generation Systems and packaged engineered solutions in Western North America. Collicutt distributes Kohler Power Systems to California, Nevada, Hawaii, Alaska, Alberta, British Columbia, Yukon, Northwest and Nunavut Territories.

They also proudly represent Mitsubishi Engines, Scania Engines, Dresser-Rand Engines, Motortech Ignition Systems, American Power Group Dual Fuel Systems and Kobelco Gas Compressors.

The business is a family owned and managed business with shared core values and passion for the client. They are a significant player in the market and continue to build on existing relationships and their stellar reputation.

Collicutt Energy Services was built on providing an exceptional client experience and delivering on their commitments. The firm is well known for supporting their clients from concept to completion with generator design, engineering, sales, manufacturing, parts and service.

In addition to the top of the line products that they distribute, Collicutt also offers custom engineered solutions. Collicutt's reputation as premium service provider gives assurance to an equipment owner that if service is required, a factory-trained technician and an international parts organization are both there to respond quickly. Clients know that Collicutt will provide peace of mind that their valuable investment will be operational when called upon.

In California, Collicutt enhances the customer's purchasing experience with detailed knowledge of the complex regulatory environment. The firm's expert sales engineers know and understand local emissions regulations and compliance measures, as well as unique local seismic and fire codes, continually interpreting them and communicating them to customers who seek guidance for their equipment selection and support for their installations.

Collicutt Energy owes its great reputation for service and support to the very principles upon which it was founded, in 1986, by Steven Collicutt. When asked about those principles Steven replied: "We have a very simple set of guidelines. Our business practices and company dedication are based on the premise that we exist because of our clients. We operate multiple branches in Canada and the United States, and strive to maintain the highest level of honesty, integrity, professionalism and accountability. There is no limit to our self-imposed expectation for excellence."

The EGSA Connection

In the mid 90's, David Brown, President of Collicutt Energy Services, attended his first EGSA Convention. He was immediately attracted to the educational and technical aspects of the organization. "I had a solid background in diesel engines and years of experience with electrical installations," Brown assert-

ed. "But EGSA provided the technical platform for learning what I needed to bridge the gap to On-site Electrical Power Generation. I still have my first On-Site Power Generation Reference Book," Brown remembers nostalgically.

"I am very appreciative of the educational and networking opportunities that I have enjoyed as a result of my association with EGSA," Brown declared. "I have many industry colleagues and friends at all levels of their respective businesses."

David is new to Collicutt Energy. But like David, Collicutt Energy, is not new to EGSA. Both have been associated with our association for many years.

David served on the Board of Directors from 2008 through 2010, while leading an EGSA member project team to streamline and produce a revised EGSA Buyer's Guide.

Collicutt plans to open two new facilities in 2014. "I am excited about our growth and look forward to expanding our reach and ability to serve our customers," said Brown. "As we grow, we will be sending all of our new technicians through EGSA's Technician Certification Program."

"Today, I am very engaged with EGSA and remain impressed with the value that the organization brings to its members. I hope to be associated with EGSA for many years to come." Brown declared.

Steven Collicutt, Founder and CEO

Steven Collicutt began his successful career more than 25 years ago in the gas compression industry. He started his business, Collicutt Mechanical Services, in 1986, as a service technician committed to service excellence. Eventually, Steve sold that company to Finning CAT and formed a new company in 2010. Collicutt Energy Services' main focus is on providing Power Generation services by representing Kohler Power Systems.

Collicutt Energy Services is built on the same vision and values which were developed through Steven's many years of proven practical experience. His leadership has been acknowledged as he accepted a national award for "Leading by Example" in Canada. He has also been named "Entrepreneur of the Year" for the service industry in Canada. The company was also listed in Canada's Top 100 Fastest Growing Companies for 3 consecutive years. Steven's strong desire to provide excellent customer service in the power generation and compression industries is the driving force behind Collicutt Energy!

Steven is actively involved in Collicutt Energy Services in Canada and the US. Steven is a member of the YPO and sits on the board of several publicly traded companies and one privately held company.

He also believes in giving back to the community and is engaged in philanthropic and volunteer support both personally and professionally and in doing so, has positively impacted thousands of lives around the world.

David Brown, President

David began his diverse career with Cummins as a young mechanical engineer during the early days of the diesel engine and component remanufacturing business. There he established a reputation for creative cost saving remanufacturing methods and innovative problem solving.

Five years into his career, David's entrepreneurial spirit beckoned and he started a small remanufacturing company and an electrical contracting business out of the same facility. Learning the electrical trade from the ground up, he became a licensed electrical contractor specializing in heavy industrial work at major facilities in California. The company also distributed a small cogeneration system.

After ten years of successful business operations, David sold his companies and became Vice President of the Cummins distributor in Southern California, a position he held throughout most of the 1990's. From there, he joined Multiquip where he served as Vice President for most of the 2000's.

Before joining Collicutt, David and his wife Diane relocated to the Midwest for 5 great years where David worked as the Vice President of Sales and Service for Kohler Power Systems. Today, as President of Collicutt Energy Services, David oversees and is responsible for all aspects of Collicutt's US business, as well as the Kohler Power Systems business in Western Canada.

David earned a BS degree in Mechanical Engineering from the University of Memphis and an MBA from Marquette University in Milwaukee, WI. David is active in the Electrical Generating Systems Association and has been recognized for his contribution to the industry. ■

The Collicutt Recreation Centre that has more than 250,000 sq ft for the families of Red Deer, AB, Canada to enjoy since 2001.

Application for Membership

ELECTRICAL GENERATING SYSTEMS ASSOCIATION

1650 South Dixie Highway, Suite 400, Boca Raton, FL 33432 • 561-750-5575 • FAX 561-395-8557
E-Mail: *e-mail@EGSA.org* • World Wide Web: *www.EGSA.org*

Under the leadership of its Board of Directors and operating through its various committees and staff, EGSA strives to educate, provide networking opportunities and share relevant knowledge and trends with industry professionals including manufacturers, distributor/dealers, engineers, manufacturer representatives, contractor/integrators and others serving On-Site Power consumers.

1. Contact Information

Please type or print all information in upper and lower case (NOT ALL CAPS!)

Company ____________________

Address ____________________

City ____________________ State/Province ____________________

Zip/Postal Code ____________________ Country ____________________

Phone ____________________ FAX ____________________

Official Representative ____________________ Title ____________________

Representative's E-Mail ____________________ Company's Web Address ____________________

How did you hear about EGSA? ☐ Web site ☐ *Powerline* magazine ☐ Colleague ☐ POWER-GEN ☐ Other ____________________

Why are you joining EGSA? ☐ Certification Program ☐ CEU Program ☐ Power Schools ☐ Buying Guide Listing ☐ Other ____________________

2. Member Classification

Read the Membership classifications below and check the box that describes your firm's classification.

I. FULL MEMBERSHIP

☐ MF **Manufacturer Membership**
Any individual, sole proprietor, partnership or corporation seeking membership must apply for a Full Membership as a manufacturer if they meet one or more of the following criteria:

1. They manufacture prime movers for power generation.
2. They manufacture generators or other power conversion devices producing electricity.
3. They manufacture switchgear or electrical control devices.
4. They manufacture or assemble generator sets, UPS systems, solar power, hydropower, geothermal, or any other power production or conversion system including related components or accessories for national or regional distribution.
5. They are a wholly owned subsidiary of a firm that qualifies under rules one through four.

☐ DD **Distributor/Dealer Membership**
Any individual, sole proprietor, partnership or corporation actively engaged as a distributor or dealer for products listed under Manufacturer Membership may apply for Full Membership as a Distributor/Dealer. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.

☐ CI **Contractor/Integrator Membership**
Any individual, sole proprietor, partnership or corporation actively engaged as a Contractor or Equipment Integrator of products listed under Manufacturer Membership, not bound by brand, geographic territory or contractually obligated as a Distributor/Dealer of a specific product. These firms typically purchase products from a Distributor/Dealer, Manufacturer or Retailer, adding value through installation, product knowledge, relationships, unique services, etc., and then re-sell the resulting product to an end-user.

☐ MR **Manufacturer's Representative Membership**
Any individual, sole proprietor, partnership or corporation actively engaged in the representation of products listed under Manufacturer Membership may apply for Full Membership as a Manufacturer's Representative. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.

☐ EM **Energy Management Company Membership**
Any individual, sole proprietor, partnership or corporation engaged in energy management, including Energy Service Companies (ESCOs), Independent Power Producers (IPPs), Integrators, Aggregators, and other similar enterprises may apply for Full Membership as an Energy Management Company.

☐ **Associate Full Membership** *(mark appropriate category at right)*
Any individual, sole proprietor, academic institution, student, partnership or corporation meeting the requirements of Associate Regular Membership may apply for Full Membership at their option to enjoy the privileges of Full Membership, including the rights to vote and to serve on EGSA's Board of Directors. Initiation fees and annual dues will be assessed at the existing non-manufacturer Full Member rates.

II. ASSOCIATE REGULAR MEMBERSHIP

☐ AA **Trade Publication Membership**
Any trade publication dealing with the electrical generating systems industry or its suppliers may apply for Associate Membership–Trade Publications.

☐ AB **Trade Association Membership**
Any trade association made up of individual or company members sharing a common interest in the electrical generating systems industry may apply for Associate Membership–Allied Associations.

☐ AC **Engineer Membership**
Any consulting or specifying engineer may apply for Associate Membership–Engineer. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AD **End-User Membership**
Any individual employee of a company who owns or operates electrical generating equipment and/or related switchgear or components, whose responsibility to his employer includes planning, design, installation, supervision, or service of such equipment may apply for Associate Membership–User. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AE **Service Membership**
Any individual, organization or academic institution that offers services such as research, testing or repair to the electrical generating systems industry may apply for Associate Membership–Services. Membership may either be held in the individual's name or the organization's name under this classification. Individual companies whose employer or parent organization qualifies as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AG **Educational Institution Membership**
Any postsecondary vocational-technical school or college offering on-site power generation-related instruction may apply for Associate Membership–Education Institution.

☐ AR **Retiree Membership**
Any individual who retires from a member company may apply for Associate Membership–Retired. This classification does not apply to any individual who is employed more than 20 hours per week.

☐ AF **Student Membership**
Any individual currently enrolled at an academic institution may apply for Associate Membership–Student.

Application for Membership – page 2

Dues Schedule (Use for Section 3)

	Annual Dues	Initiation Fee	TOTAL
Manufacturer	$870	$200	$1070
Distributor/Dealer	$300	$100	$400
Contractor/Integrator	$300	$100	$400
Manufacturer's Rep	$300	$100	$400
Full Associate Member	$300	$100	$400
Energy Management Companies	$210	$100	$310
Regular Associate Member	$210	$100	$310
Retiree Member	*Complimentary*	$0	$0
Student Member	*Complimentary*	$0	$0

NOTE: A FULL 12-MONTH DUES PAYMENT MUST BE RECEIVED WITH THIS APPLICATION. The Association's Membership Year is January 1 through December 31. Dues payments that extend beyond the first Membership Year will be applied to the second year's dues.

FULL PAYMENT MUST BE RECEIVED WITH APPLICATION.

3. Membership Dues (Please fill in the appropriate TOTAL amount from the above dues schedule.)

Membership Dues $__________

Membership Plaque (optional)** $ 49.95**

On-Site Power Reference Book (optional)** $ 137.00**

Florida Residents: Add 6% Sales Tax to ** items $__________

*** Shipping and handling is included for Continental US Residents.*

Non-Continental US Residents should call EGSA $__________

*Headquarters for shipping charges for **items.* **TOTAL** $__________

4. Payment Method (Payable in US$ drawn on U.S. bank, U.S. Money Order, or American Express)

☐ Check #____________ Amount Due $ __________

☐ Money Order

☐ Mastercard ☐ Visa ☐ American Express

Card # ______________________________ Exp. Date ______

Signature: ____________________________________

Print Name: ____________________________________

5. Products/Services

Please describe the nature of your business (50 words or less, NOT ALL CAPS). If you are a Manufacturer's Representative or Distributor/Dealer, please indicate which manufacturers you represent and/or distribute for; if you are a student, please provide the name and location of your school, your major and your anticipated graduation date:

____

____

____

____

____

____

Do you buy AND sell equipment? ☐ Yes ☐ No Do you manufacture packaged equipment? ☐ Yes ☐ No

Available Codes:

01 ---Batteries/Battery Chargers
02 ---Control/Annunciator Systems
29 ---Education
30 ---Emission Control Equipment
04 ---Enclosures, Generator Set
05 ---Engines, Diesel or Gas
06 ---Engines, Gas Turbine
07 ---Engine Starters/Starting Aids
08 ---Filters, Lube Oil, Fuel or Air
28 ---Fuel Cells
03 Fuel Tanks and Fuel Storage Systems
09 ---Generator Laminations
10 ---Generator Sets
11 ---Generators/Alternators
12 ---Governors
13 ---Heat Recovery Systems
14 Instruments and controls, including meters, gauges, relays, contactors, or switches
15 ---Load Banks
16 ---Motor Generator Sets
17 ---Radiator/Heat Exchangers
18 ---Relays, Protective or Synchronizing
19 Silencers/Exhaust Systems/Noise Abatement
20 ---Solenoids
21 ---Switchgear and Transfer Switches (Automatic or Manual), Bypass Isolation Switches, and/or Switchgear Panels
22 ---Trailers, Generator Set
23 ---Transformers
24 ---Uninterruptible Power Supplies
25 ---Vibration Isolators
26 ---Voltage Regulators
27 ---Wiring Devices or Receptacles

Enter codes here: (Limit 10 codes per category)

Products sold: ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Products rented: ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Products serviced: ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

6. Sponsor(s)

: A"Sponsor" is an EGSA Member who interested you in filling out this application. It is not mandatory that you have a sponsor for the Board to act favorably on this application; however, if a Member recommended that you consider membership, we request that individual's name and company name for our records.

Sponsor Name ______________________________ Company Name ______________________________

7. Official Representative's Authorization

Signature ____ Date ____________________

NEW EGSA MEMBERS

MF=Manufacturer DD=Distributor/Dealer CI=Contractor/Integrator MR=Manufacturers Rep
EM=Energy Management Co. AA=Trade Publication AB=Trade Association AC=Engineer
AD=End-User AE=Service AG=Educational Institution AR=Retiree AF=Student

American Ckritical Energy Systems, Inc.. . DD
Bulverde, TX
Clay Snyder, President
American Ckritical Energy Systems is a minority owned, HUB certified service company founded in 1995. We provide maintenance, sales, and repair of critical power systems and their associated products.

AMPS . . . . AB
Colchester, Essex UK
Paul Blything, Director General
The Association of Manufacturers of Power Generating Systems. AMPS is the British trade association representing Europe's leading specialists in the design, manufacture, installation and maintenance of on-site electrical power generating systems and their components for clients world-wide.

Caldwell Electrical Contractors, Inc. CI
Gainseville, GA
Daniel Caldwell, Vice President
We are an electrical contractor providing installation and repair services for all major brands of generators in the commercial and industrial environment.

Carlor Engineering. . . . . MF
Grivegnee, Belgium
Fabian Klaurens, CEO
Carlor Engineering designs and manufactures comprehensive engine heating solutions to improve the reliability of generators and engines around the world. We work together with our partners to provide efficient and long-lasting engine preheaters that meet their needs. Carlor also focus on developing and implementing economical and environment-friendly engine heating solutions.

Component Specialists, Inc. . . . . MR
Roscoe, IL
Martin Hendrickx, President
Fozmula - fluid sensors/switches, gauges, temp senders/switches, Contec GmbH oil mist recovery systems, Dixie Electric new & remanufactured engine alternators/starters, Midtronics magnetic speed sensors, Wellcharter ignition coils & sensors.

Davis Power Systems. CI
Alexandria, VA
John Davis, Owner
Electrical contractor, generator sales, service and rentals.

Disaster Safety Strategies . . . . AE
Wichford, RI
Cara Klein, Sr. VP
Disaster mitigation communications firm and research company.

E & W Electrical, LLC. . . . . DD
Hillsborough, NC
Michael Williams, President
Power systems provider focusing on complete energy solutions for residential and commercial customers. We specialize in the sale, installation, service and repair of automatic stand-by generators. We also offer generator monitoring, energy and fuel source management, photovoltaic design and cost analysis, surge protection, UPS, fuel cells and retail parts sales.

GNC Power Systems Inc.. . . . . DD
Nevada, TX
Gary Chafin, General Manager
Dealer of AKSA Power generators. We buy and sell good used generators diesel and natural gas. We do preventative maintenance services for generators. Full service shop, repairs, paint, load bank and electrical problems.

Intermountain Sustainable Power Systems
(Scott Machinery Co.) . . . . DD
West Valley City, UT
JK Scott, President
We provide sales, parts, service and rental of sustainable power generation equipment to the construction, utility, property and facility maintenance, including governmental and related markets throughout the intermountain west.

International Power Group (IPG). . . . . MF
Saida Lebanon
Khaled Chehadeh, General Manager
IPG is an electrical generating systems assembling factory, we assemble power generators, manufacture control panels, automatic transfer switches and synchronizing totalizing panels.

IPU Group . . . . MF
West Midlands UK
Robert Beebee, Managing Director
IPU design and build exceptional fuel polishing systems and systems for extending oil life by at least two times. IPU also supply fuel analysis equipment and real time oil condition monitoring sensors. We are the world's leading designer, manufacturer and supplier of systems for Hydraulically and Air Starting generators and fire pumps. We also supply 'spring' mechanical starters.

JM Electrical Contractors Inc.
DBA Island Generators Co. CI
Wantagh, NY
Joseph Mutino, President/Owner
Generator sales, installation and service. We represent Kohler and Generac.

Jones Technical Institute . . . . AG
Jacksonville, FL
Gregory Jones
Jones Technical Institute is a post-secondary vocational school located in Jacksonville, FL. Currently, the institute offers a 91 quarter credit or 1,435 clock hour Occupational Associate Degree in Diesel Technology. The institute plans to add a power generation component to the Diesel Technology core.

KW Power Systems, Corp.. . . . . AE
Medley, FL
Pedro Feliciano, VP
Generator maintenance and repairs.

Enroll In One of Our EGSA Rowley Schools Today!

Join the Ranks of Professionals Who Understand the Power Generation Industry.

A key component of growing professionally is to keep rising to new challenges and opportunities. Electrical Generating Systems Association (EGSA) offers a rigorous, two-tiered education program that outlines the technical aspects of power generation. Our classroom schedule is built to accommodate both coasts and everyone in between!

Select your education experience and get the most out of your professional development dollar by attending one of our schools in 2014.

Basic Schools	Advanced Schools
~~Scottsdale, AZ - Feb. 25-27~~	San Antonio, TX - Apr. 28-May 1
Charlotte, NC - Jun. 3-5	Carlsbad, CA - July 14-17
Minneapolis, MN - Aug. 12-14	Rosemont, IL - Oct. 20-23
Orlando, FL - Dec. 9-11	

George Rowley School of On-Site Power Generation

Electrical Generating Systems Association
(561) 750-5575 • e-mail@EGSA.org
EGSA.org

NEW EGSA MEMBERS

P3 Generator Services CI
Alpha, NJ
Brent Kephart, VP/GM
P3 Generator Services sells, rents and services all brands of generators throughout NJ, PA and NY. Founded in 1990, P3's customers include nursing homes, water companies, waste water treatment facilities, school districts, etc. As a division of Power Pool Plus, P3 sells and rents generators throughout South/Central America and the Caribbean,

Power Systems Inc. . . . . DD
Lexington, SC
Mel Moody, President
Distributor/dealer for Baldor, Briggs & Stratton. Sales and service.

Power Up Electric . . . . DD
Bella Vista, CA
John Harrington, Owner/Partner
Power Up Electric is an authorized industrial dealer for Generac Power Systems in the northern California area. We offer sales, installation, service and repairs for all types of generators.

Ronnies Generator Service Ltd.. . . . . DD
Mississauga, ON Canada
Paul Lattavo, VP
Generator service

UL LLC . . . . AE
Northbrook, IL
Maria Surprise, Market Development Manager
Nationally recognized test lab (NRTL) providing safety testing and certification to electrical standards.

ZMac Transportation . . . . AE
Racine, WI
Ray Ziegler, Sales Manager
ZMac Transportation is a specialized freight broker that concentrates on flatbed & over dimensional freight. We have a large & diverse customer base spanning many different industries. However, power generation is one of our strongest areas of expertise. ZMac is unique in that we are the only company in the country offering an online pricing tool for quoting over dimensional weight. ZRate allows our customers to quote their own freight rate up to 80'x14'x14' instantly.

Carrington, Tim . . . . AF
Woodstock, GA

Countryman, Trenton. . . . . AF
Woodstock, GA

Culbert-Castelo, Tyler . . . . AF
Uxbridge, ON Canada

Davis, Ian . . . . AF
Orangeville, ON Canada

Farmer, Jackson. . . . . AF
Lufkin, TX

Gallant, Michael . . . . AF
Ancaster, ON Canada

Judson, Joshua . . . . AF
Janetville, ON Canada

Kinkley, Brett . . . . AF
Toronto, ON Canada

Mitchell, Kyle . . . . AF
Oshawa, ON Canada

Post, Jonathan . . . . AF
Belleville, ON Canada

Putnins, John . . . . AF
Lindsay, ON Canada

Renaud, Thomas . . . . AF
Amherstburg, ON Canada

Robinson, Peter . . . . AF
Lindsay, ON Canada

Rolling, Daniel . . . . AF
Dorchester, ON Canada

Schaefer, Christopher . . . . AF
Kennesaw, GA

Storey, Steven . . . . AF
Bancroft, ON Canada

van Sommeren, Sietske . . . . AF
Aylmer, ON Canada

Windebank, Devin . . . . AF
Cameron, ON Canada

Wright, Aaron . . . . AF
Harrow, ON Canada

Global Coverage Of The Power Generation Markets
Industry News . . . From Kilowatts To Megawatts
Print
or Digital
Online or Newsletters
Your Choice — We Deliver
Subscribe At www.dieselpub.com
Diesel Progress
Diesel Progress International
Diesel & Gas Turbine Worldwide
Diesel & Gas Turbine Sourcing Guide

EGSA JOB BANK

USA Midwest

Planned Equipment Maintenance Coordinator (Req. 14-0007)

Cummins Bridgeway, LLC

Location: New Hudson, MI

Job Summary: Responsible for administering Planned Maintenance Quotations, Agreements and Invoices in PEM Quote Tool and BMS database. Please visit http://www.cumminsbridgeway.com and click on the "careers page", and "apply" to view a full job description/ requirements for this position.

To apply: Please visit www.cumminsbridgeway.com and click on the careers page.

Service Technicians & Sales Representatives

Cummins Bridgeway, LLC

Location: Michigan, Ohio & Pennsylvania

Please visit http://www.cumminsbridgeway.com/ for a complete listing of jobs in your area. Now Hiring: Find an exciting and rewarding career with a leader in the diesel engine and power generation service industry.

Our employees are dedicated, professional, and knowledgeable and provide customer service and product support to elevated levels that is unparalleled in our industry. Come and join our team where your skills are valued. Power up your Career!

To apply: Apply online at http://www.cumminsbridgeway.com

Field Service Power Generation Supervisor

Cummins NPower

Location: White Bear Lake, MN, USA

Key Responsibilities: Responsible for the entire workflow and successful outcome of each job. Supervises assigned field technicians. Schedules and plans technician work, manages to efficient work flow and quality excellence. Visit http://www.cumminsnpower.com/ for full job description and refer to ID requisition 14-0011 when applying. EEO/AA Employer

To apply: http://www.cumminsnpower.com/
Application Deadline: 2014-04-01 00:00:00

Field Service Power Generation Supervisor

Cummins NPower

Location: White Bear Lake, MN

Please visit http://www.cumminsnpower.com/ for complete description of job position. Cummins NPower LLC is an Affirmative Action/Equal Opportunity Employer that welcomes diversity in the workplace. All applicants will receive consideration for employment regardless of their race, color, creed, religion, national origin, sex, sexual orientation, disability, age, marital status, or status with regard to public assistance.

To apply: Apply online at http://www.cumminsnpower.com/ and refer to requisition number 14-0014
Application Deadline: 2014-05-01 00:00:00

EGSA Job Bank Guidelines

EGSA will advertise (free of charge) EGSA Member company job openings in the Job Bank. Free use of the Job Bank is strictly limited to companies advertising for positions available within their own firms. Companies who are not members of EGSA and third-party employment service firms who service our industry may utilize the Job Bank for a $300 fee. Blind box ads using the EGSA Job Bank address are available upon request; company logos may be included for an additional fee. EGSA reserves the right to refuse any advertisement it deems inappropriate to the publication. To post an EGSA Job Bank ad (limited to approximately 50 words) please visit *www.EGSA.org/ Careers.aspx.*

USA National

Technical Support Engineer

ComAp LLC

Location: Roscoe, IL USA

Help us change the future in power generation controls. We're constantly looking to build our team with high performers to match our growth. We believe the more talent we have, the more we can achieve. This is your opportunity to make a huge impact within a rapidly growing company. ComAp LLC is a global leader with a solid reputation for delivering innovative solutions and advanced products for the power generation and industrial drive markets, with a focus on excellence, reliability, and value.

To apply: Careers@ComApllc.com

Sales Engineers and Application Service Engineers

ComAp LLC

Location: Roscoe, IL USA

Help us change the future in power generation controls. We're constantly looking to build our team with high performers to match our growth. We believe the more talent we have, the more we can achieve. This is your opportunity to make a huge impact within a rapidly growing company. ComAp LLC is a global leader with a solid reputation for delivering innovative solutions and advanced products for the power generation and industrial drive markets, with a focus on excellence, reliability, and value.

To apply: Careers@ComApllc.com

USA Northeast

Power Systems - Class A Field Technicians

H.O.Penn Machinery

Location: Bronx NY

- Minimum five years experience in Electric Power Generation, including troubleshooting and repair of Electrical equipment (generator, ATS, Switchgear), AC and DC, and diesel engine
- Must be computer proficient - able to run diagnostic software and prepare service communications
- Must have strong communication skills and high self management
- Valid driver's license

To apply: https://careers-hopenn.icims.com/jobs/1136/mechanic---power-systems-field-service-class-a/job?mode=view

Rental Sales Manager

Kinsley Power Systems

Location: Syracuse, NY

Kinsley Power Systems is looking for a Rental Sales Manager for Western NY. The position is responsible for prospecting and closing business for rental temporary generators and associated accessories (distribution, cables, transport, fueling) and related assets (light towers/message boards). Excellent benefits with uncapped commission.

Apply at http://www.kinsley-group.com

Industrial Sales Engineer

Kinsley Power Systems

Location: Western MA and Vermont

Kinsley Power Systems is looking for an Industrial Sales Engineer. This sales position focuses on industrial applications from 20kW to 2800kW, including related equipment (transfer switches, switchgear, etc). The customer base includes engineers, electrical contractors, end-users and OEMs, among others.

Apply at http://www.kinsley-group.com

Generator Technician

The Generator Connection

Location: Barrington, NH

The Generator Connection Inc. is a full service generator company with locations throughout New England, and we are currently looking for a skilled generator field service technician to service our residential and commercial customers.

Requirements: Must possess ability to perform on gas & diesel engines, alternators, electrical switch gear & control systems.

EGSA Certified Techs Preferred.

To apply: Apply by e-mail to r.rafford@generatorconnection.com

USA Southeast

Field Service Technician

CJ's Power Systems

Location: Ocala, Florida USA

We are a 40 year old company providing service and support to our customers throughout the Southeastern US. Currently we are seeking field service technicians with a minimum of 3 years experience in maintenance, service and repairing engine/generators and related equipment of all makes and models. Must have a strong work ethic, excellent customer service skills and a clean driving record. We offer a competetive salary, full benefits package and bonus program. Relocation for qualified candidates.

To apply: kowensby@cjspower.com

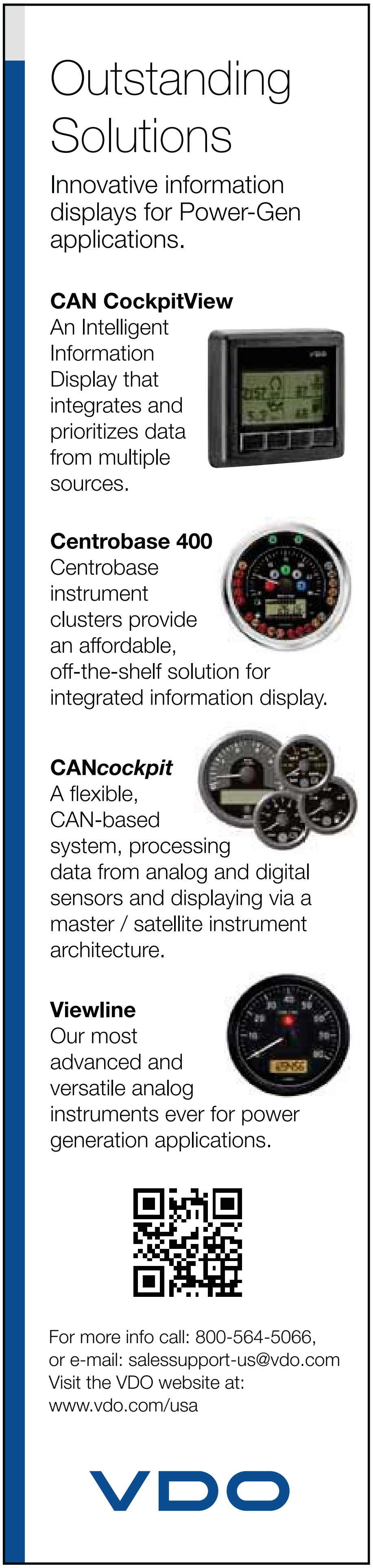
Emergency Generator Sales

Genset Services, Inc.

Location: Pompano Beach, Florida

Genset Services, Inc. the top tier industrial distributor for Generac generators in South Florida has two openings for outside sales positions. Candidates should have a minimum of 3yrs sales experience in emergency power equipment or in a similar or related field. A degree in Electrical Engineering is a plus. We offer a competitive compensation package that includes a base salary plus commission, car allowance, health insurance, vacation and investment plan.

To apply: Please forward your resume with cover letter and salary requirements to matt@gensetservices.com.


Outstanding Solutions

Innovative information displays for Power-Gen applications.

CAN CockpitView
An Intelligent Information Display that integrates and prioritizes data from multiple sources.

Centrobase 400
Centrobase instrument clusters provide an affordable, off-the-shelf solution for integrated information display.

CAN*cockpit*
A flexible, CAN-based system, processing data from analog and digital sensors and displaying via a master / satellite instrument architecture.

Viewline
Our most advanced and versatile analog instruments ever for power generation applications.

For more info call: 800-564-5066,
or e-mail: salessupport-us@vdo.com
Visit the VDO website at:
www.vdo.com/usa

VDO

EGSA JOB BANK

Generator Service Technicians

Genset Services, Inc.
Location: Pompano Beach, Florida

We are growing! Genset Services, Inc. is seeking qualified generator technicians for our Central and South Florida branches. Working knowledge of Diesel and Gaseous engine driven generator sets is required including service/maintenance, troubleshooting/repair of AC and DC electrical and control systems as well as strong computer skills. Ideal candidate will have neat appearance and clean driving record. We offer a competitive compensation package including company vehicle, health insurance, vacation and an investment plan.

To apply: Please forward your resume with cover letter and salary requirements to keith@gensetservices.com.

Switchgear Systems Sales Engineer

Nixon Power Services
Location: Atlanta, Georgia

Nixon Power Services has an opening for a Sales Engineer in Atlanta who would be responsible for sales and complete project management of specified accounts and/or projects that they sell and those sold by the Regional sales team. A Bachelor of Science and 5 years work experience in like field is desired. Ability to work with the contractor/end user to bring the project in at/or under budget and insure customer satisfaction required. Nixon Power Services offers competitive salary and benefit package. Clean driving record is required.

To apply: Please send resume to resumes@nixonpower.com or fax to 615.309.5839

Generator System Specialist-Outside Sales

Nixon Power Services
Location: Atlanta, Georgia

Nixon Power Services is recruiting for a Generator System Specialist who would be responsible for products sales, aspects of new unit start-up, and pre/post-sale customer relations, including design engineering. Previous generator sales and ability to manage projects desired. A technical aptitude and ability to help in engineering design is required. Established relationships in the contracting/engineering community desired. Must be willing to travel extensively;have a clean driving record. Nixon Power Services offers competitive salary and benefit packages.

EGSA Certified Techs Preferred.

To apply: Please send resume to resumes@nixonpower.com or fax to 615.309.5839

Aftermarket Customer Service Manager

Nixon Power Services
Location: Atlanta, Georgia

Nixon Power Services has an opening for an Aftermarket Customer Service Manager, which is a senior leadership position responsible for the Service department's financial performance; parts sales and operations; warranty administration and execution; warehouse, shipping and receiving; and inventory management. This position requires effective, professional communication, the capacity for quick learning and ability to teach others complex data, process and control tasks. Experience with Crystal Reports and Great Plains Dynamics applications is preferred. Clean background and driving record is required. Nixon Power Services offers competitive salary and benefit packages.

To apply: Please send resume to resumes@nixonpower.com or fax to 615.309.5839

Manufacturer's Rep Seeking Principals

Leading Mid-South manufacturer's rep is seeking additional product lines. We have decades of experience in all aspects of the onsite power generation industry. We are interested in adding quality complementary manufacturers to our line of superior products serving the industry. Our record of outstanding success can help you achieve your sales and market share goals. Please respond if you have an area where you desire additional sales and market share.

Please respond to: *J.Kellough@EGSA.org*
(Reference PLMJ13JB-1)

power generation issues?
we've got solutions
ANNA Inc.
www.annainc.com

Distributed Power Generation and Compressor Technology Seminars Scheduled in Atlanta, Georgia

Woodward, Inc. announced it will co-host instruction seminars on Distributed Power Generation and Compressor Technology in Atlanta, Georgia, with distribution partner Governor Control Systems, Inc., of Fort Lauderdale, Florida.

Seminars are scheduled April 22-24, 2014 at the DoubleTree/Hilton Hotel Atlanta Airport.

The seminar topics to be featured are:

April 22: Steam Turbine, Gas Turbine & Compressor Basics
April 23: Introduction to Distributed Power Generation, Control and Management
April 24: Control of Natural Gas and Bio-Gas Engines, Emissions Workshop

These non-commercial instructional seminars are targeted to professional and specifying engineers, project designers, facility managers, and end users who wish to expand their knowledge of control strategies and network with other industry professionals. The subject matter is technical in nature but is presented to accommodate novice laypersons with minimal experience.

By presenting these seminars Woodward and Governor Control Systems aim to demonstrate their technical expertise in these areas and encourage future collaboration with attendees. The lectures are not intended to promote specific products or services, and as such each session qualifies for 6 professional development hours.

The seminars are open to the public and attendees may register for any sessions of interest. The nominal registration fee includes all session materials, a continental breakfast and banquet lunch.

For detailed information on session topics and instructions on how to register please visit: *www.woodward.com/seminar.* ■

Warshauer Electric Supply Adds a Trailer Mount Rental Division and Department Personnel

Warshauer Electric Supply, a New Jersey based electrical wholesaler, is pleased to announce the opening of a new division of Warshauer Generator LLC, the Trailer Mount Rental Division.

To support its newly created Trailer Mount Rental Division, Warshauer is pleased to announce the hiring of Michael Sparandera as Mobile Rental Coordinator. Michael joins Warshauer after seven years in the rental division of Onsite Energy, where he worked as a Project Manager and Rental Sales Coordinator.

Warshauer is also pleased to announce the addition of John Carroll to its Generator Sales Group.

John is a Senior Civil Engineering student at the New Jersey Institute of Technology (NJIT) and is working part time in our Generator Sales Group until graduation in May 2014. Prior to his studies at NJIT, John spent five years in the United States Navy, where he was responsible for performing diagnostics, testing, maintenance and repairs on various engines, valves and coolers. He also currently works part-time as an automotive service technician.

With the addition of John, Warshauer now has five graduate engineers in its Generator Sales Group.

Visit *www.warshauer.com* for more information. ■

Magnetech Appoints New Sales Representatives

Industrial services provider Magnetech Industrial Services, Inc. announced the addition of 2 outside sales representatives at its Saraland, AL service center. Ronnie Weeks, who represents the Alabama territory, brings more than 20 years of experience in industrial sales and business development, including 6 years in motor repair services and 3 years with GE, for whom Magnetech is an authorized distributor and service provider. Customers may contact Mr. Weeks at *rweeks@magnetech.com* or (504) 232-9541. Jerry Horner, who represents the Louisiana-Mississippi territory, is the previous owner of Horner Electric and has more than 30 years of experience in the industrial supply and repair business. Customers may contact Mr. Horner at *jhorner@magnetech.com* or (251) 401-7792. ■

Warshauer Electric Supply Spreads Awareness for Heart Disease in Women

Warshauer Electric Supply, a New Jersey based electrical distributor, supported the American Heart Association's Go Red for Women campaign by participating in National Wear Read Day® on Friday, February 7, 2014. Warshauer became aware of the organization and National Wear Red Day after hearing Karin Jordan tell her story on 94.3 The Point, and knew immediately that they wanted to get involved.

Heart disease, also known as the silent killer, is the number one killer of women, and is more deadly than all forms of cancer combined. In many cases, deaths can be prevented, but most women do not notice the symptoms until it is too late. For more than 10 years, the American Heart Association has sponsored National Wear Red Day to help raise awareness and fight against heart disease in women.

To help spread awareness and support this cause, Warshauer asked employees to participate by wearing red. Employees from all five branches dressed to show their support. Warshauer also replaced over 50 bulbs throughout their Lighting Design Center Five Star Showroom, located at its Tinton Falls Corporate Headquarters, with red bulbs (pictured above: Lighting Design Center with red light bulbs and employee participants).

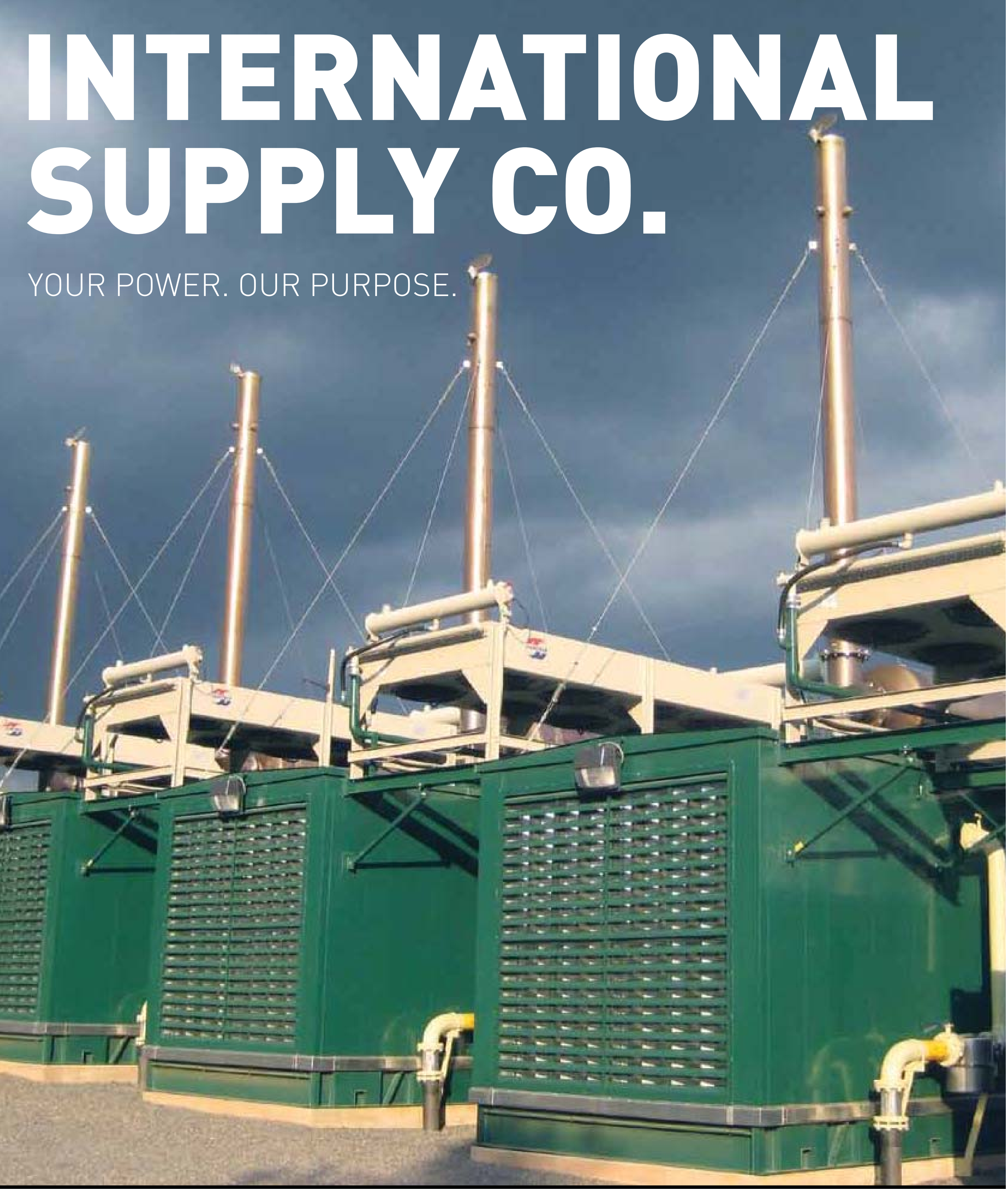
For more information about Go Red for Women, visit *www.goredforwomen.org.* ■

Ojibway Enclosures Completes Move Into Universal AET's Beloit Facility

Ojibway Enclosures recently completed the move from its former Janesville, WI, production facilities and offices into Universal Acoustic & Emission Technologies' Center of Excellence on the Ironworks campus in Beloit, WI.

Ojibway – which designs and manufactures sound-attenuating enclosure systems, provides generator set packaging services for the standby power generation industry, and performs laser cutting, welding and forming of metal products – was acquired by Universal AET in July 2013. Universal AET is a global designer and manufacturer of engineered acoustic and emissions solutions for the Power Generation, Gas Turbine, Oil and Gas, Rail, Engine & Emissions, and Industrial Processing markets.

The move helps production by bringing operations under one roof into a more efficient configuration than the previous two locations. There is also more lifting capac-



LEARN MORE AT ELHISCO.COM

International Supply Co.

(309) 249-6211 EDELSTEIN, IL

ity with higher tonnage cranes and higher hook heights in Beloit that allow Ojibway staff to produce and move larger units, including improved logistics capabilities for bigger products to be built. New equipment includes a blast and paint booth; a roll former; a shear, high-definition plasma cutter for thicker steel; precision weld & fixture tables; and improved welding capabilities.

"The move into our Beloit Center of Excellence makes both the Ojibway division and Universal AET a more efficient organization for our customers, with streamlined access to Universal AET's existing resources and personnel," said Universal AET Executive Vice President and Chief Operating Officer Dick Strojinc. "We have more capacity and are producing new orders even faster, with the highest degree of quality. Future expansion plans and equipment additions are scheduled to increase capacity further."

New employees have been hired since the acquisition, and other positions are in the process of being filled.

Universal AET occupies 106,000 sq. ft. in the Center of Excellence and has an additional 67,000 sq. ft. in reserve for potential expansion, which will enable the company to grow its engineering, manufacturing and distribution capabilities. The Center of Excellence brings together a dedicated team of engineers, designers, business staff and manufacturing specialists under one roof.

For more about Universal AET, visit *www.universalaet.com.* ■

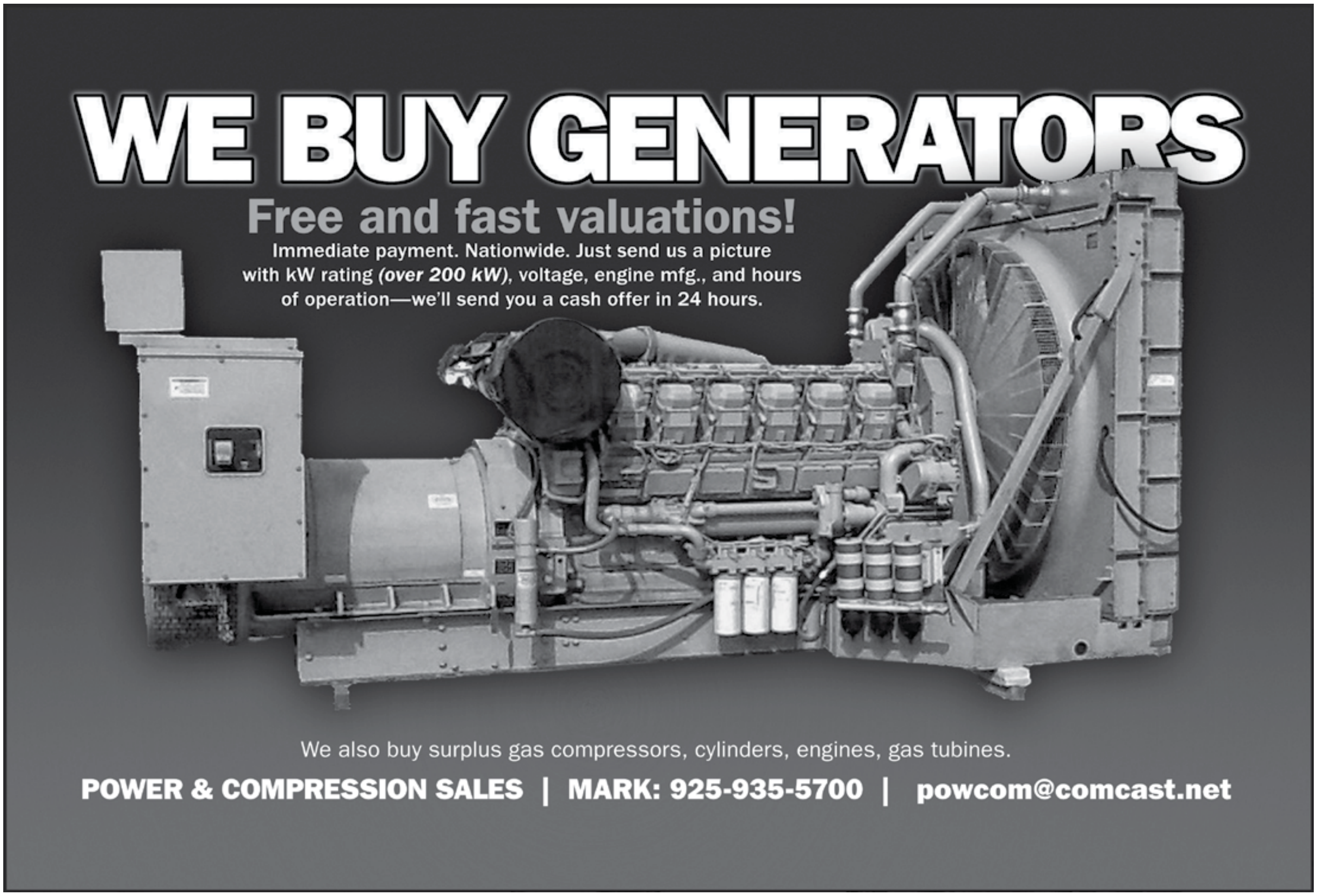
Shawn Sweet named VP Industrial Sales for Volvo Penta Americas

To further grow and strengthen its industrial engine business in the Americas, Volvo Penta has appointed Shawn Sweet as Vice President of Industrial Sales. In this role, Sweet oversees the company's engine business for the off-road versatile (VE) and power generation (GE) applications. Sweet, who is supported by Director of VE Engine Sales Darren Tasker and Director of GE Engine Sales Bob Apple, also has responsibility for industrial product application and sales channel development.

Sweet is a recognized leader in the industrial equipment business, with more than 20 years of experience in the road building and construction equipment, oil and gas, mining and portable power industries. He most recently served as president of Doosan Portable Power, where he was responsible for the global business, including sales, manufacturing and all functional areas of the portable air compressor and generator business. He has also worked in senior executive leadership roles at Ingersoll Rand and Volvo Construction Equipment.

"We have a broad product lineup and significant opportunity to further grow our customer base and distribution network," said Volvo Penta Americas President Ron Huibers. "Based on his extensive industry experience and record of performance, Shawn is the right person to lead our industrial business as we strengthen our market position in the Americas."

Sweet has a degree in civil engineering from the University of New Brunswick in Canada and has served in the Canadian Air Force. He joined Volvo Penta on February 24, 2014. ■


WE BUY GENERATORS
Free and fast valuations!
Immediate payment. Nationwide. Just send us a picture with kW rating ***(over 200 kW)***, voltage, engine mfg., and hours of operation—we'll send you a cash offer in 24 hours.
We also buy surplus gas compressors, cylinders, engines, gas tubines.
POWER & COMPRESSION SALES | MARK: 925-935-5700 | powcom@comcast.net

Now you can see your critical power management systems like never before.

ASCO PowerQuest® The vision to see what others can't.

PowerQuest delivers the answers you need about your Critical Power Management System (CPMS) — precisely when you need them. Finally, there's one single gateway to reliably monitor all the critical power data points in your facilities.

- Communicate, monitor and control power transfer switches, generator paralleling switchgear, gensets, breakers, loadbanks, and more
- Review test schedules, event logs, power reports and trends
- Add and shed loads based on capacity and priority
- Analyze power quality issues with precise sequence of events recording
- Enjoy dynamic visualization over flexible, convenient and secure systems

ASCO's PowerQuest. The singular solution to manage your critical power infrastructure.

www.EmersonNetworkPower.com/ASCO • (800) 800-ASCO • ascoapu.com

ASCO Power Switching & Controls
Just another reason why Emerson Network Power is a global leader in maximizing availability, capacity and efficiency of critical infrastructure.

ASCO®

EMERSON™
Network Power

Emerson and ASCO are trademarks of Emerson Electric Co. or one of its affiliated companies. ©2013 Emerson Electric Co. CS104QR ASCO Power Technologies

EMERSON. CONSIDER IT SOLVED.™